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## Mono Team Tightens Ties To Microsoft

Visual Basic compiler added to environment; .NET components next

BY ALEX HANDY

Mono, the open source .NET runtime project run by Novell, has gone back to basics. In February, the Mono team announced that it has added, for the first time, a Visual Basic compiler to the Mono environment. This compiler marks the first of many new advancements planned for the project in 2007, according to Novell.

"We had the ability to run Visual Basic applications in Mono," said Frank Rego, product manager for Novell's open platform solutions, "but we did not have the ability to compile Visual Basic applications. That makes a big difference in the area of ASP.NET," where on-the-fly compilation is necessary.

"Before," he noted, "we could run programs that didn't depend on the compiler on the Mono side, [but] we could not run ASP.NET applications written in Visual Basic."

Rego said that 2007 will see Mono come into line with .NET components. "We're working toward compatibility with ASP.NET 2.0, ADO.NET 2.0 and Windows Forms 2.0. We ought to have the ASP.NET work done midyear and Win-

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## Redmond Clears Barriers Before Vista

### Assessment, deployment tools may ease transition

BY DAVID WORTHINGTON

Transitioning to Windows Vista is no small order for enterprises: Microsoft has changed the inner workings of Windows and clamped down on previously liberal user account permissions. IT administrators must triage applications for compatibility, and make certain that individual desktops are powerful enough to run Microsoft's latest operating system.

Responding to those challenges, Microsoft last month released its updated Windows Vista deployment tools. The tools peruse networks for incompatibilities, "virtualize" applications,

Microsoft is providing free deployment tools for Windows Vista to expedite its adoption. Among them are:

- **Microsoft Application Compatibility Toolkit 5.0:** Composed of evaluators and tools that determine application compatibility and provide guidance.
- **Windows Vista Hardware Assessment 1.0:** Can stop unqualified PCs from being upgraded if users heed its warnings.
- **Microsoft Solution Accelerator for Business Desktop Deployment 2007:** Offers tools and best practices to deploy Windows.
- **Virtual PC 2007:** Runs legacy and custom applications in a virtualized software environment.
- **Volume Activation Management Tool:** Centrally manages and automates activation using a multiple activation key.
- **Key Management Service for Windows Server 2003:** Hosts activation as a local service without sending any information to Microsoft.

assist in the deployment of Windows, and automate product activation.

Microsoft starts in the trenches—with applications. The Microsoft Application Compatibility Toolkit (ACT) 5.0 is composed of

evaluators and tools that determine application compatibility—for commercial and in-house software—before Windows Vista is deployed. ACT does not mitigate problems, but will provide developers with suggested fixes.

Meanwhile, on Feb. 21, Redmond published a list of compliant applications that received either "Certified for Windows Vista" or "Works with Windows Vista" status. Of the 787 applications initially listed, 104 were certified for Windows Vista. Applications that have been certified have met the technical requirements of Microsoft's testing program. The conditions for the "Works with Vista" tag are not as rigorous: Application vendors must document known compatibility issues, which must be non-fatal in nature. Security vendors Symantec and McAfee are notable standouts; none of their products are listed in either category, while Trend Micro did earn certification for its client and server-side products.

Microsoft is offering vouchers of up to US\$1,000 as an enticement for developers to certify their products with VeriTest, a credentialed third-party testing service. VeriTest is certified by Microsoft to follow the Windows logo certification program.

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## SCO v. IBM: Case Closed?

Trial not till next fall, but 'lawsuit is doomed,' attorney says

BY JENNIFER DEJONG

It's been a long four years of lawsuits, countersuits, motions for dismissal and judges' refusals to grant them. And with the trial date now set for September 2008, the case of SCO v. IBM isn't over yet. Or is it?

"SCO has no future," said Tom Carey, an intellectual property attorney for Boston-based law firm Bromberg & Sunstein. "The lawsuit is doomed."

Industry analyst Rob Enderle

echoed those sentiments, saying he believes the company has no future beyond the outcome of the lawsuit.

The SCO Group sued IBM in March 2003 for US\$1 billion, alleging that IBM took code from SCO's version of Unix, and, without authorization from SCO, contributed it to open source operating system Linux. The essential complaint that SCO has against IBM—that

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Have Software  
Developers  
Become  
The Police?

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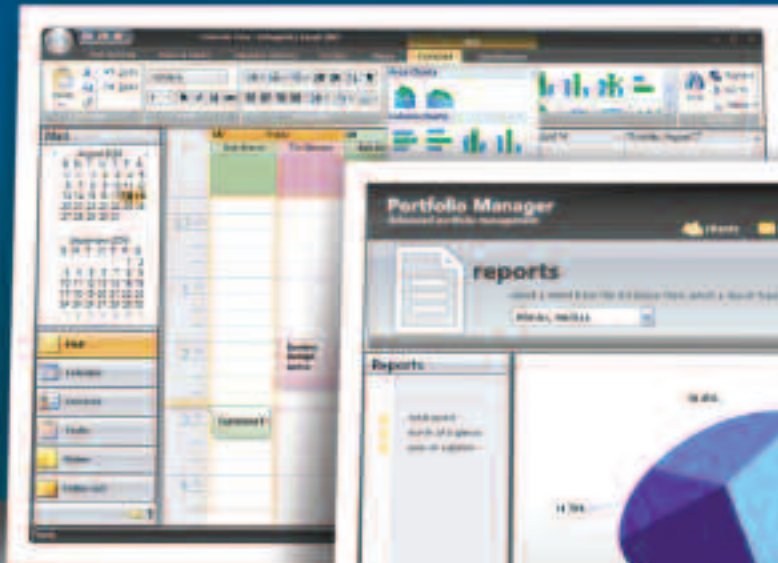


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# Compiler Optimization Nets Turing

## Frances E. Allen becomes first woman to win ACM's prestigious award

BY ALEX HANDY

In February, the Association for Computing Machinery announced that former IBM employee Frances E. Allen was the recipient of the 2006 A.M. Turing Award. Allen, who was the first female IBM fellow, worked for decades in the field of compiler optimization and parallel programming. She is the first woman to receive the award, which is widely regarded as the highest honor in computer science.

Allen began her career in computer science after she received an M.A. in mathematics from the University of Michigan in 1957. Her original intent in studying math was to bolster her ability to teach the subject, something she had done off and

on since her graduation from Albany State Teachers College in 1954. Shortly after graduating from Michigan, IBM came to the campus to recruit new talent. Allen initially intended to work for the company only as long as her student debt existed. She would eventually spend

the entirety of her 45-year career inside the company's New York City facilities.

Her first task at IBM was to teach the company's scientists and researchers how to program in Fortran. At the time, IBM was pushing all of its programmers into learning the then-new language, and the company was



IBM Fellow Emerita  
Frances E. Allen

encountering stiff resistance from scientists, who felt that high-level languages and compilers were inferior to writing straight machine code. But Allen's experience as a teacher proved her greatest asset. Over time, her work helped to spread Fortran throughout IBM.

At the same time, Allen learned about the inner workings of the Fortran compiler.

"That was of course a learning experience for me too, because I didn't know the language," said Allen in an interview with IBM conducted just after her retirement, "and that's what teaching is often about—you have to learn

the subject as you go. It turned out to be tremendous. That really set my career, in some sense, that very initial assignment, because I understood what the possibility was for high-level language in a compiler, which was extraordinary."

Later in the 1950s, Allen began working on compiler optimizations for the IBM Stretch project, a failed attempt to build a revolutionary computer around reduced memory latency and buffering. Her work there laid the foundations for her eventual work on the Harvest project, an effort to construct a code-breaking computer for the National Security Agency. Here, Allen again worked on compiler optimizations, this time for a new cryptography-

oriented language called Alpha.

At the beginning of the 1980s, Allen formed a new group within IBM to look into the process of compiling applications for use on parallel processors.

"My goal has always been," said Allen in an interview, "through my compiling work, [to] support languages that are...useful by the physicist, useful by the person who is solving a problem, and have a language or set of languages or tools, or whatever, that are natural for the way that person thinks about the problem and the way the person wants to express the problem." ■

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# After a Merger, Time to Digest

BY JEFF FEINMAN

In the world of application life-cycle management, larger players such as Borland Software, IBM Rational and Serena Software have scrambled to acquire best-of-breed companies with the objective of offering full ALM suites. Hewlett-Packard's acquisition of Mercury Interactive has been in the spotlight recently, and although it's known more for selling printer supplies than software, HP dropped the Mercury brand name on the assumption that its own brand still carried weight with enterprise customers.

What happens, exactly, when the door to the conference room slams shut and high-end business executives put their heads together to come up with the best method of integrating an acquired company? Many factors, including the need for proper synergy between products and technologies, the financial impact to the companies, and the amount of disruption to customers, merit consideration.

The best path toward success in ALM integration, according

to analysts, is to have a strong understanding of the market. "The key to a strong integration is a holistic understanding of the market needs, requirements and the creation of a synergistic environment to effectively serve the needs of the customer," said Voke research group founder Theresa Lanowitz.

Jason Bloomberg, senior analyst at ZapThink, offered another perspective. "The key to successful integration is to stop thinking in terms of integration altogether. Instead, think in terms of architecture. Integration should be a byproduct of service composition in the context of SOA. It should be something the business does with the capabilities and information at its disposal—not something IT has to do before the business can get any value out of the technology."

In order to integrate the products being acquired with Mercury, HP based its plans around Mercury's original "Center" product lines, creating nine Software Centers focusing on different customer bases. This new perspective showed "that

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## ANALYSTS' CHAIR

SD Times asked some of the top analysts in the ALM game to provide insight on some of the more notable acquisitions that have occurred in the past few years. Here's what they had to say:

### SERENA/MERANT

"Serena did well in its most recent release of Dimensions at integrating the SCM capabilities several years after its Merant acquisition and beginning to integrate the requirements capabilities. The message around end-to-end change management across these key areas (requirements, distributed and operational change management and SCM, and portfolio prioritization) is resonant with Global 2000 user needs, but will take more time to execute for Serena."

—Melinda Ballou, ALM program director, IDC

"Serena fundamentally adopted the Merant product line and folded its own offerings into the Merant products and has added functionality and integration mechanisms."

—Jim Duggan, research vice president, Gartner

### IBM/RATIONAL

"IBM confused customers with product naming, and IBM's existing development tool lines overlap and are hard to make sense of for the average customer. Adding Rational's products to the mix made an existing problem a bit worse."

—Joe Niski, analyst, Burton Group

"During 2006 and moving into 2007 we are increasingly seeing leverage across IBM Tivoli and other business units for IBM Rational. Yet the breadth (and in many cases, the depth) of what IBM Rational is seeking to accomplish makes seamless integration and execution challenging as well."

—Melinda Ballou

"Roughly, IBM acquired the Rational product line and has functionally enhanced it and added some elements, but [has] not done significant new integration."

—Jim Duggan

### BORLAND/TOGETHERSOFT

"Borland really dropped the ball with their TogetherSoft acquisition. TogetherSoft had some strong architecture tooling that Borland could have built into some solid SOA offerings, but they failed to execute."

—Jason Bloomberg, senior analyst, ZapThink

"Borland dismantled TogetherSoft as a company and put some of the product parts into its own offerings. Borland is now attempting some significant new integrations, but the genesis of the TogetherSoft parts is not very significant."

—Jim Duggan

### BEA/FLASHLINE

"This is a much more targeted acquisition of lesser breadth than the other ALM suite vendors. SOA life cycle is a key area of focus and must be addressed for success in SOA implementations. In that context, BEA was innovative in its Flashline acquisition."

—Melinda Ballou

### HP/MERCURY

"HP gets good grades, because they are on the right track with the Mercury acquisition. Only time will tell, however, if they'll be as successful with that integration as they hope."

—Jason Bloomberg

"HP will absorb the Mercury products focused on IT operations and create integration with the OpenView product line. The quality assurance tools will most likely be forgotten by HP. The quality assurance market is now in a disruptive state. In 24 months people will have to think long and hard to remember the Mercury name and what HP acquired in this most recent acquisition."

—Theresa Lanowitz, founder, Voke



## NEWS BRIEFS

## NEW PRODUCTS

A new **EnglishToUML Basic 1.0** CASE tool for generating UML data models from simple English sentences has been released by Object-Trees Soft Consulting. The tool has a specialized editor that analyzes the simple sentences and extracts a data model from the analysis, displaying the result in a diagram editor . . . Texas Instruments announced plans in February for a DaVinci-based SDK, for use with Windows Embedded CE and the company's DM644x system-on-chip processors. The SDK will include drivers, interprocessor communication features, an OS adaptation layer, and a Windows Embedded CE board support package; it will be generally available in the second quarter . . . Real-Time Systems announced in February the beta of **Real-Time Hypervisor**, which lets RTOSes run on the same hardware as a general-purpose operating system without compromising the stability of the RTOS. Real-Time Hypervisor allows the use of user-shared memory and includes a TCP/IP network driver. It will be available this summer.

## UPDATES



Atalasoftware released **DotImage 5.0** in the first week of March. DotImage 5.0 is an imaging SDK for .NET with a collection of AJAX controls for ASP.NET and WinForms controls for C# and VB.NET. Version 5.0 supports browser-based server-side annotations for document images, is optimized for dual-core processors, includes the latest iteration of the Document Cleanup Module, and has a from-scratch TIFF Codec . . . ASPEED Software has released a version of **Accellerant for Excel 2007** as an application additive to improve application, VBA and C/C++ performance in parallel environments. Supported environments include multicore systems, grids, clusters and high-performance computing . . . ComponentOne has released an extension to Visual Studio 2005 that adds support for ASP.NET AJAX 1.0 and the ASP.NET framework. **ComponentOne Studio Enterprise** has four new scheduling components that can be assembled into Outlook 2007-style applications through a drag-and-drop interface, though some coding is still required . . . Perforce Software has released version **2007.1** of its namesake software configuration management system. A new graphical tool allows Perforce administrators to have control over permissions and dependencies in the repository, while the new "Reconcile Offline Work" feature helps developers sort out changes made while disconnected from a Perforce server . . . Bare Bones Software released **BEdit 8.6.1** in mid-February, incorporating a number of behavior and bug fixes for the text editor, and support for the LaTeX command "\verb." The new version also adds syntax coloring for the Mac OS X ".strings" file format, and is free for BEdit 8.5 and 8.6 users . . . Aonix announced the first commercial release of its **PERC Pico** development environment for Java targeted at resource-constrained and so-called "hard" real-time applications. Aonix claims that PERC Pico execution times are three times faster than Java and are similar to C/C++ applications . . . Real-time data integration software seller DataMirror has released **DataMirror Transformation Server 6.0**, based on Change Data Capture technology that captures changed data from recovery logs, cutting the risks associated with trigger-based or table-scan solutions, according to the company. Version 6.0 has a redesigned UI, enhanced monitoring, better change management and improved SQL Server support . . . Telelogic's latest release of its **Rhapsody** modeler for real-time embedded systems supports the UML 2.0 Testing Profile for integrating the design and test process into the Rhapsody environment. ■

## PEOPLE

SAP solutions provider Worksoft has named **Christina Hanger** as COO. Hanger was SVP of operations, Americas, for Hewlett-Packard prior to joining Worksoft . . . Serena Software has named **Jeremy Burton** as its new president and CEO, filling the roles held by **Michael Capellas** on an interim basis after longtime CEO **Mark Woodward** resigned in December. Burton served most recently as group president of enterprise security and data management for Symantec. ■

# VMware Claims Microsoft Is 'Rigging' Virtualization Market

BY DAVID WORTHINGTON

EMC subsidiary VMware nailed its proverbial theses to the door at the end of February, when it published a white paper accusing Microsoft of underhanded tactics and conspiring to freeze competitors out of the virtualization software market. Microsoft denies the accusations and vows that it will keep its software interoperable.

The white paper, released Feb. 27, alleges that Microsoft is restricting customers' flexibility to run the virtualization software of their choice by "limiting who can run their software and how they can run it."

The message: Microsoft is generating dependency on its products.

VMware's accusations are premised on Microsoft's decision to restrict access to proprietary virtualization APIs to certain partners—in particular, Novell—and adoption of licensing conditions that limit virtual machine portability, especially in the use of Microsoft's VHD virtual hard disk format. The APIs orchestrate communication between Windows itself and what will eventually become Longhorn's hypervisor, which manages resources for multiple virtual machines. VMware claims that Microsoft is not permitting the APIs to be used by other virtualization software vendors and open source projects.

## API SHARING

Mike Neil, general manager for virtualization at Microsoft, countered the accusation in his blog, writing: "To encourage interoperability, we openly share technology and have published a set of APIs [announced at the June 2006 WinHEC conference] for all our commercially available virtualization products today and provided documentation on APIs for the hypervisor that will be part of the next version of Windows Server, code-named Longhorn."

Neil claimed that Microsoft will publish the APIs publicly, in beta form.

The white paper claims that restrictions placed on the VHD format prevent system images from being run outside of

Microsoft's Virtual Server environment. Language in Microsoft's licensing backs up the assertion that customers are barred from using its VHDs under anything other than Virtual Server and Virtual PC.

Beyond the shrinkwrap license, screenshot evidence presented in the white paper reveals that VHDs are configured to deactivate if they are run under other virtualization products. The white paper portrays it as an "aggressive mechanism" that will "force users to run virtual machines on Microsoft products, essentially undermining customers' choice."

## A VIRTUAL RUCKUS

Another chilling effect, in VMware's evaluation, is that Windows virtual appliances will not run under any virtualization platform other than Microsoft's. VMware has proposed an open industry standard for virtual storage devices known as Virtual Machine Disk Format, but Microsoft has not embraced VMDF, choosing instead to promote VHD.

Customers and ISVs are forbidden by the Virtual Server 2005 Release 2 license from translating Microsoft's VHDs into another virtual machine format. Hardware and software vendors must ship VHDs that are certified by a Microsoft-controlled qualification tool.

"Microsoft believes the best approach for customers lies in establishing a foundation of cooperation between vendors, which is why we strive to regard virtual machines and virtualization technology the same way. Windows Server licensing offers a level playing field to all," Neil wrote in his team blog.

A recent malicious exploit of Windows Vista's virtualization layer alerted Microsoft to the downside of virtualization: weaknesses in security and data protection. It is turning to its partners to mend the dents in its platform's armor.

Other points in the white paper scrutinize Microsoft's decision to restrict technical assistance for virtualization to its Premier-level support customers. VMware also bemoaned

Microsoft's constraints on desktop virtualization that may limit the mobility of virtual machine transfers.

VMware depicts Microsoft's licenses as being inflexible, discouraging virtual machine mobility, based on the original Vista license. Initially, Microsoft's licensing terms for Windows Vista would have been more restrictive than Windows XP had Microsoft not modified the license in response to feedback from PC and hardware users. Customers had been given permission to transfer Vista between machines once, while customers transferring a license to Windows XP Professional were granted an unlimited number of transfers, provided the software was uninstalled from the original machine. Windows Vista retail customers have now been granted similar rights under a modified EULA, while OEM licenses forbid transfer of any kind.

Microsoft has tailored the Windows Vista Enterprise Edition license—available only by volume purchase—to customers interested in virtualization. A single Enterprise license includes the right to be installed on one physical machine and up to four virtual machines that are all on the same device. However, virtualized Vista must operate within confines: The Ultimate and Enterprise editions of Vista cannot use content secured by Microsoft's digital rights management and content rights management technology. Vista Home Basic and Vista Home Premium may not be virtualized at all. Microsoft attributes these restrictions to security concerns.

## MISCONSTRUED INTENTIONS?

In an updated blog entry, Microsoft's Neil claimed that this is much ado about nothing, suggesting that VMware's white paper has technical inaccuracies and it misconstrues Microsoft's intentions.

Going forward, Neil pledged on Microsoft's behalf that the company will accommodate VMware with a "mutually agreeable solution" addressing the points raised in the white paper. ■





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# Pervasive Spreads Java Across Multicores

BY ALEX HANDY

With multiple cores come multiple challenges: Enabling applications to run their tasks in parallel is a must for any modern developer starved for speed. That's why Pervasive Software is preparing its DataRush Framework for an April release. The software aims to make parallel data analysis programs easier to build, and to allow them to run on Java application servers.

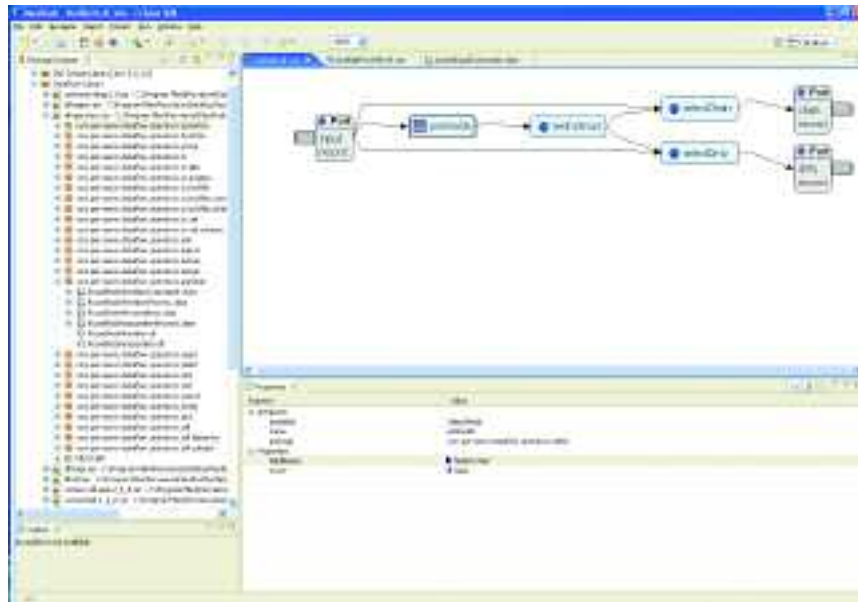
CTO Mike Hoskins joined Pervasive in 2003 when it acquired Data Junction, the company he founded in 1984. "The volume of data was increasing, and at the same time the volume of demand for metrics from customers was increasing," said Hoskins of those bygone days. "That generation of software was not going to scale for the data volume we were facing. Everyone agreed that the answer is parallelism. Half the story is that the hardware guys have really gotten this. When Intel and AMD get behind an idea, the growth

is really spectacular. Yes, we've got a horrible data volume, but at least we've got the hardware to deal with it."

But Hoskins saw the software side of the equation as lacking. He pointed out that developing multithreaded applications that can run operations in parallel is difficult, and requires specific knowledge of data flow theory and concurrency.

Emelio Barnabei, director of product management at Pervasive, said that his company has done all of the research into data-flow theory and parallel programming, so that developers using the DataRush Framework can get right to work on the functionality of their applications.

"We looked at the multi-core revolution. We saw the need to help developers support highly parallel Java applications in single memory space," said Barnabei.



The DataRush Framework includes a visualizer that can map out the flow of data analysis routines as they're prepared for parallelization.

The result is a two-part solution: An Eclipse plug-in for building the applications, and an application server plug-in for running them. "Scalability is achieved with our runtime capabilities and the ability to spread agents across CPUs," said Hoskins. The DataRush Framework includes

50 premade agents, or operators, for doing data manipulation in this way. Developers can also build their own operators that can be added to the mix. DataRush then handles the allocation of cores and the input of data through JDBC connectors.

When running these opera-

tors, each CPU core takes a single operation, and performs it as the data arrives. Since Pervasive handles the ins and outs of this core allocation process, developers need only concentrate on writing the functionality required to manipulate the information coming in, said Hoskins.

The DataRush Framework is currently in an open beta form. Developers can download both portions of the software to try it out for free. When the product is finalized in April, developers will still have access to a free version of the framework, while enter-

prises will be offered a subscription-based sales model, priced per CPU. Barnabei could not detail the final pricing information as of press time, but did estimate it should be in the range of US\$500 to \$900 per CPU, per year, depending on Pervasive's final pricing decisions. ■



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# It's About TimesTen for Oracle Release

BY P.J. CONNOLLY

Oracle announced in February the general availability of Oracle TimesTen 7, the latest version of the company's in-memory database that provides real-time applications with a

new level of interoperability with Oracle Database 10g. Although it's been a year and a half since Oracle acquired TimesTen in 2005, this is the first version that was developed entirely under the Oracle aegis.

A number of new features in TimesTen 7.0 make the product more compatible with the behavior and functionality of Oracle Database.

For example, TimesTen now supports Oracle 10g datatypes,

synchronization with Oracle databases, and SQL functionality that offers semantics familiar to Oracle 10g users. But these haven't come at the expense of cross-version support; 6.0 and 7.0 clients and databases can

connect in each direction.

The new release includes optional caching and replication with Oracle Database; TimesTen and its options are priced according to the size of the in-memory database. The database runs on a wide variety of operating systems: AIX 5L, HP-UX 11i, HP Tru64, Linuxes from Monta-Vista, Novell and Red Hat, along with Solaris 8 and Windows 2000 and later.

## SPEED COUNTS

The main advantage to an in-memory database is speed, which is everything for certain applications. As Oracle's senior vice president of business strategy, Jim Groff, put it, TimesTen 7.0 can do work in millionths of a second that requires "thousandths of a second for typical client/server access across a network to a back-end Oracle database."

TimesTen 7.0 now supports more than 50 database character sets and 80 languages; these features are essential to supporting an increasingly global customer base. TimesTen can also be used with Oracle's Fusion Middleware, JDeveloper and SQL Developer, and Oracle Real Application Clusters.

The TimesTen update offers improved caching, with dynamic loading and automatic aging of cached data based on time or usage. Common caching schemes, including dynamic on-demand caching, reference data caching and sliding time window caching, are all available in the basic product. TimesTen handles the dataflow between itself and the underlying Oracle database without user intervention.

The replication and cache connect-to-Oracle features in TimesTen 7.0 now allow the development of high-availability schemes across database tiers. These methods are suited for both read-only cache groups, where all updates flow from the Oracle server to TimesTen; and asynchronous write-through groups, where nodes pass updates back to the Oracle database. Replication conflicts can now be reported in XML format, but apply only to master-master or bidirectional schemes. ■

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# Virtualization, Vista for SQL Server 2005 Pack

BY P.J. CONNOLLY

The February release by Microsoft of a second service pack for SQL Server 2005 addresses two issues that have been in the news for the past few months: virtualization and Vista.

Other enhancements in SQL Server 2005 SP2 address interoperability with the updated 2007 Microsoft Office applications, including Excel, SharePoint Server and Visio, and offer improved reporting features. Customers using SQL Server 2005 Enterprise Edition can now run unlimited virtual instances of the data management platform, when appropriately licensed.

Meanwhile, SQL Server Analysis Services (SSAS) have been tweaked to yield better performance with Excel 2007, while data mining add-ins for Office allow the use of Excel 2007 and Visio 2007 as direct consumers of SSAS' mining tools.

The service pack includes a new "vardecimal" format that allows the storage of decimal and numeric data in variable-length columns. This allows the efficient storage of data where a high degree of precision is required, but most values in the column are not that precise; this flexibility can significantly reduce disk space requirements.

SQL Server Reporting Services were updated in SP2, and integrated with Windows SharePoint Services 3.0 and Office 2007 SharePoint Server. Other new features in SP2 allow the use of database snapshots, and enable the use of database maintenance plans without requiring SQL Server Integration Services to be installed. Maintenance plans now can run in multiserver environments, can log to remote servers, and can use multiple schedules. Automatic cleanup from maintenance tasks is included as well.

## REPORTING GETS BOOST

SP2 also adds a number of reporting enhancements in SQL Server Management Studio, which apply to both the standalone editions and the embedded SQL Server Express Edition. Users can now integrate their own custom reports into the management

tools, and reports no longer share a single window, which allows users to quickly compare two or more reports.

Scalability concerns in the reporting tools were also

addressed, particularly in the area of disk usage. What had been one report on disk space is now five; a top-level view is supported by four reports with greater

degrees of detail.

SQL Server Express Edition customers face a more complicated path; those customers will have to separately download new versions of the

Express Edition, the Express Edition with Advanced Services and the SQL Server Express Toolkit and Management Studio, to get the SP2 enhancements. ■

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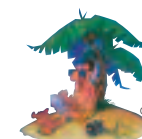
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# Working in Concert on Woodstock JSF

BY ALEX HANDY

There are no hippies at this Woodstock—only Java. Sun Microsystems announced in mid-February the beginnings of a new open source project for the creation of JavaServer Faces

(JSF) components. Dubbed Project Woodstock, the effort has resulted in an initial offering of themeable Web components that are already localized for 10 different languages.

Craig McClanahan, senior

software engineer at Sun and creator of the Apache Struts framework, said that Project Woodstock's biggest boon is the ability to change how each component appears by editing the single Cascading Style file

to which it is tied.

Woodstock contains JSF code that can sort tables, embed pop-up calendars into Web pages and handle file uploads from end users, said McClanahan. In the future, he added, the

project should get more AJAX behind the scenes. This time, Woodstock contains only one AJAX-enabled component: a progress bar.

"One of the things we tried to do is let the application developers speak Java," said McClanahan. "The progress bar component takes care of all the asynchronous communications for you, so you as an application developer don't have to know AJAX." ■

## WindowTester Pro 2.0 Automates GUI Testing

BY DAVID WORTHINGTON

Instantiations has released an updated version of its Eclipse-based WindowTester Java GUI testing tool. The two main thrusts of WindowTester are its GUI recording components and Java support, which is used to add assertions and custom test logic. GUI recording provides playback of GUI application interactions, while assertions are inserted to check under the hood, verifying that the processing is correct.

WindowTester Pro 2.0 has the same functionality as the 1.0 release, but is more refined with Swing support and an improved runtime API for refactoring tests. It automates GUI testing for the Swing toolkit and the SWT framework, is built on the open source JUnit testing framework, and can be integrated into any Eclipse development environment.

"We use straight Java built on JUnit, which means we play nice with Ant and other JUnit tests. This is a big deal in big test automation scenarios such as BEA," said Phil Quitslund, architect of WindowTester. Because Java is the foundation for WindowTester, Quitslund said he believes programmers can apply their existing best practices to artifacts and reuse components.

Instantiations is endeavoring to make GUI testing less cumbersome by automating testing tools to reduce the programming burden on developers and making Java client testing results more consistent and repeatable.

"Since we started using WindowTester, tests that took two to three weeks to write previously can now be done in two to three days," said Steve Tocco, director of the quality assurance workshop unit at BEA Systems. ■

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FarPoint Spread for BizTalk can automatically disassemble Excel (XLS) files in your BizTalk process.



# SlickEdit Adds Class to 2007

## Class browser, automatic formatting top new features list

BY ALEX HANDY

After a dozen releases, SlickEdit is getting a name change. Rather than slapping the numeral 12 onto the title of this year's first release of the multiplatform IDE, the company of the same name has moved to a year-based naming convention. SlickEdit 2007, as it is now known, adds a new class browser, code annotations and automatic markup language formatting. It should be available in mid-March.

XML and HTML are being enhanced in much the same way the comments system was updated in SlickEdit 11, where the IDE introduced automatic text wrapping and indentation for long comments. SlickEdit vice president of software development Scott Westfall said this addition was one of the most popular among users, so his team decided to bring the automatic formatting capabilities into the tool's HTML and XML routines.

"We do all the justification of the text for you," said Westfall. "With HTML and XML, you have text values with start and end tags, but now you don't have to go and put all those carriage returns between each line."

SlickEdit 2007 also adds code annotations, a meta-commenting system. Annotations marked up in SlickEdit are not viewable in other IDEs, but Westfall said they're saved as simple XML files with direct links to where in the code they belong.

Westfall was most enthusiastic about SlickEdit's new class browser. "You can browse the inheritance hierarchy," he noted, "or you can see just the members of the current class. To me, this has been one of the most fundamental views for object-oriented programming. It shows you, 'What variables can I use here?'"

Other changes to SlickEdit 2007 include the pushing of color information into copy-and-paste buffers. This means that copying code and pasting it into another application will preserve not only the formatting, but also the syntax-highlighting and text coloration that helps to keep things readable.

Java coders also are getting a boost in SlickEdit 2007, with the addition of Java Live Errors. This feature runs Java code through

the actual JavaC compiler installed on the user's machine to find errors and bugs. Previous versions of this feature had relied

upon Jikes to do Java error detection, and this caused incompatibilities with Java 2 versions 1.5 and higher. Now, said

Westfall, errors can be found using the computer's installed Java runtime, leaving no room for discrepancies.

Along with SlickEdit's new name comes a new port of the tool: SlickEdit 2007 is the first version that runs on x86 Solaris. SlickEdit 2007 also adds native font support for Mac OS X.

New buyers will pay US\$299 for SlickEdit 2007; owners of previous versions can update for \$139. ■

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# Ruby Reaches Big Leagues With Two IDEs

## Komodo, Ruby in Steel updates drive spread of object-oriented scripting language

BY LARRY O'BRIEN

The year has started off well for Ruby programmers developing on Windows. After a year of explosive growth in popularity, the object-oriented interpreted language with particular strengths in scripting and Web development finally has not one, but two professional development environments that give the language the primacy it deserves.

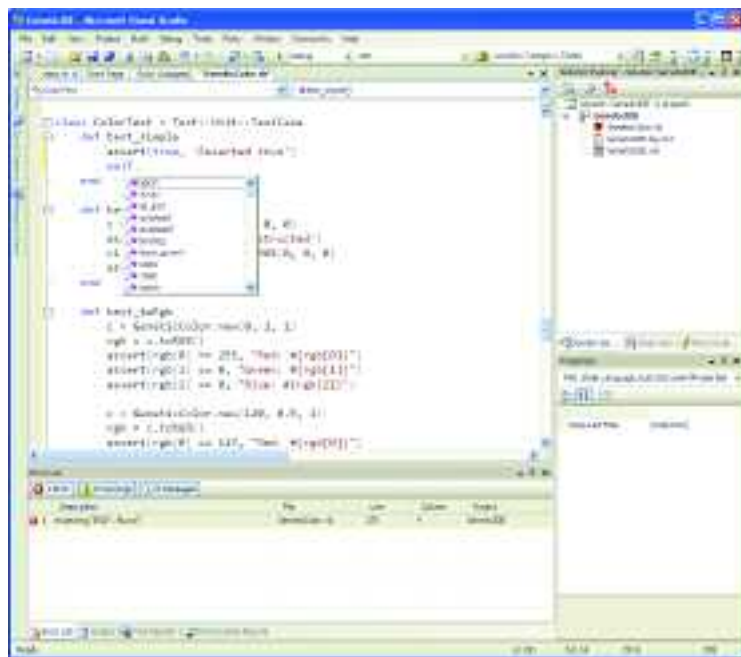
Not that the environments of either Komodo 4 (ActiveState, US\$295) or Ruby in Steel (Sapphire-Steel Software, US\$199) are Ruby-specific; Komodo is well known in Perl and PHP development circles, and Ruby in Steel is a plug-in for Visual Studio 2005 (Standard Edition and above—users of the free Express Editions are unfortunately excluded).

### RUBY'S RISE

Ruby was first released to the public in 1995 by its designer Yukihiro Matsumoto and developed to a broadly usable language by the early 2000s. For a few years, it was a well-regarded but not particularly popular alternative to the so-called “dynamic” languages in the Perl/Python continuum. Compared with other dynamic scripting languages, Ruby is distinguished by completely embracing object orientation as an organizing principle. The influence of Perl and Smalltalk are clear in the design of the language, with Perl's scripting-oriented love of implicit variables and optional parentheses and Smalltalk's emphasis on manipulating objects with a straightforward grammar. Ruby's grammar is complicated somewhat by the aforementioned optional elements, as well as inconsistencies on the equivalence of curly brackets and “do ... end” tokens.

The 2004 release of David Heinemeier Hansson's Ruby on Rails “opinionated” Web framework sparked the current Ruby fever. Rails' philosophy of “convention over configuration”—in which likely good enough decisions about project structure, naming, build strategies and database mapping are automatically generated—was both provocative and productive.

Popular books from The Pragmatic Programmers further evangelized the



As a plug-in for Visual Studio 2005, Ruby in Steel's greatest strength is the familiarity of that popular environment.

language, tied it to the latest trends in agile development, and with their sales triggered the current avalanche of books, blogs, conferences and coverage. And, now, development environments.

Ruby is unusual in that the two areas in which it has the greatest demonstrable strength—small scripts and Rails-based Web development—have remarkably different development styles. Scripts, ranging from a few to a few hundred lines of code, are the stuff of a single file, hard-coded paths and variables, interaction and quick edits.

The conventions of Rails include a project tree with an even dozen high-level folders, organizing such things as database scripts, plug-ins and unit tests. There's still rapid iteration (if you're not interested in rapid iteration, Ruby isn't the language for you), but development is more likely to involve longer sessions, more open files and lots of navigation. Both Komodo and Ruby in Steel can be used successfully for both styles, but an emphasis on one over the other does turn out to be important to a decision between the environments.

Ruby in Steel is hosted within Visual Studio 2005. It has to be emphasized immediately that despite its association with Microsoft's development environment, Ruby in Steel does not provide a Ruby for the Common Language Runtime (aka the .NET

Framework), but instead targets and debugs within the standard Ruby interpreter. The download and installation, while painless, had a few glitches: It silently assumed the wrong location for my Ruby interpreter, causing my very first “Hello World” to fail. And while SapphireSteel provides a fast Web server and superior “Cylon” debugger for Rails applications, they are not activated by default.

The familiarity of the Visual Studio environment is undoubtedly Ruby in Steel's greatest strength. The “Project” wizard adds a new panel for Ruby projects, files are organized in the

familiar Project Manager, key-bindings and font choices are as expected, etc. The downside of being a plug-in is, obviously, cost and unfamiliarity if you are not currently a Visual Studio customer.

Komodo 4 had a painless download and installation process, with the notable ability to install on Linux and Macintosh in addition to Windows. I was pleased with the dead-simple integration with source-code control (CVS, Perforce and Subversion) and had no trouble getting a Ruby program up and running in moments.

### CODE COMPLETION

The great delight in both environments is their support for code-completion of Ruby programs. Ruby uses the familiar object-oriented “instance-period-

method” idiom, and in both environments, a moment after typing the period, up pops a list of potential operations. Ruby in Steel's code completion is more comprehensive, working properly on numbers and accurately resolving implicit **self** references. Both environments do an admirable job of making recently defined functions available, but Ruby in Steel additionally picks up and displays RDoc comments in a tooltip. Further, Ruby in Steel supports type “hints” provided in specially formatted comments. I am a fan of explicit typing for team-based programming, so I quite like this feature, although it screams for some kind of automated enforcement tool as part of the build/check-in process. Code navigation is speedy in both environments, although again it seems that Ruby in Steel does a better job of dealing with Ruby's object model and bringing up appropriate ancestor classes.

### DEBUGGING

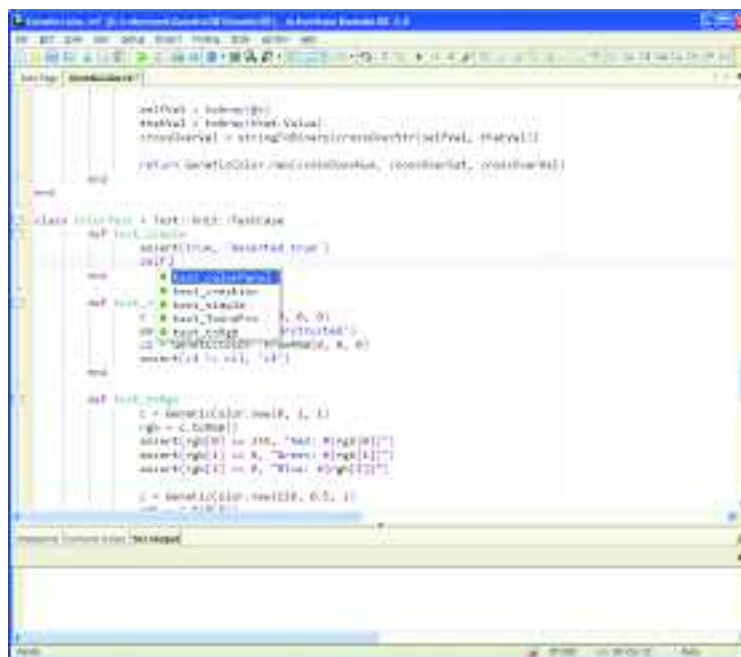
Another great joy of these environments is their debugging support. Both have similar styles: The code editor has a “gutter” in which conditional and unconditional breakpoints can be set with a mouse click and, once in a debug session, variables can be watched, dynamically inspected and drilled down into.

A slight caveat here for Ruby in Steel users is that a crucial window—the Ruby Console—is not made visible by default, one of the few clear flubs in the product. Also, Komodo has the advantage in true interactive Ruby, providing a GUI-based console, while Ruby in Steel relies on running IRB in a DOS box, from which cut and paste is significantly more difficult.

Finally, given Ruby in Steel's competence in the editing windows, it's odd to

report that, inside the debugger, Ruby in Steel seems to be less capable with object structure than Komodo; the “Locals” window often shows all the in-scope variables concatenated into a single string (they can be disambiguated in the “Watch” window or the Ruby Console).

The most significant functional gap between the environments is in their support for Ruby on Rails. Ruby in Steel provides spare but functional dialogs for creating, configuring, debugging and using generators in Rails, while Komodo leaves these to the command line; I found the dialogs to be both conve-



Komodo 4 is a complete development environment available across Windows, Linux and Macintosh platforms and specializing in dynamic languages.

Larry O'Brien, who writes the Windows & .NET Watch column for SD Times, is a technology consultant, analyst and writer. Read his blog at [www.knowing.net](http://www.knowing.net).

continued on page 26 ►





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# HP Tries to Digest Mercury Products After Merger

◀ continued from page 5

there was very little overlap in the HP and Mercury products. In instances of overlap, we have a plan to converge on the best solution for the customer over

the next 18 months, based on the size of the installed base, maturity of the product platform and technical competitiveness," said Robin Purohit, vice president of products for HP.

Acquiring Mercury gave HP added capabilities in management software, including the ability to measure and monitor the performance of applications through test and development

software and tools. Mercury's application life-cycle management solutions will be integrated into HP's OpenView portfolio, which consists of network and systems management products.

Lanowitz argued that existing HP customers should view the acquisition as a positive step.

"HP now has more to offer existing software customers in terms of application-specific technology, instead of just network-specific technology," she said. "Existing HP customers are more than likely part of the IT operations organization. Given their organizational placement, roles and responsibilities, they will be impacted by integration of Mercury application management products and possibly the IT governance offerings."

Lanowitz pointed out that HP has not revealed how it is going to grow its ALM product lines to enhance offerings for quality assurance customers, which she claimed is arguably its largest customer base. However, Jonathan Rende, vice president of products for HP Software, said that HP will be increasing investments to integrate existing quality assurance and performance validation businesses "upstream" to strategy solutions such as those used in project management, and "downstream" to operations solutions such as service and infrastructure management.

## HP IN 'UNIQUE POSITION'

"ALM vendors and solutions historically take a developer-centric approach to the life cycle," Rende said. "HP Software now is in the unique position of redefining ALM to focus on quality through further investment in this core strength and then expand to other phases of the life cycle."

Nevertheless, Lanowitz seemed to remain a bit skeptical of the HP-Mercury lashup. As a new fish in the ALM pond, HP might have a difficult time keeping up with some of the faster schools.

"The application life-cycle market is competitive," she said. "The players are established, and the enterprise is looking for strategic partners to form their application life-cycle ecosystem. HP does not have the luxury of time to sort out the Mercury acquisition. Given that HP has little understanding of the application life-cycle market and enterprise software in general, it will be difficult for the spirit of Mercury to survive in the larger entity of HP." ■

## Never tried SlickEdit? What's your excuse?

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# iTKO Has New Partners in Its Corner

## LISA 3.5 integrates with webMethods' Infravio and HP Quality Center

BY DAVID WORTHINGTON

Developers are keenly aware that testing will persist all the way through the life cycle of their SOA implementations, and that there is more than one approach to take toward testing. iTKO customers now have more options: The company has forged horizontal partnerships with webMethods and HP that will broaden the utility of its LISA SOA testing platform.

LISA is a collaborative SOA testing platform that provides QA across data, application and presentation layers throughout the product life cycle. Integrating it with complementary products may improve the odds of KO'ing bad code.

### ONE-TWO PUNCH

First combination: LISA can now be a component of SOA governance when used with webMethods' Infravio. Developers can build a role-based SOA governance layer that has a UDDI- and JAXR-based repository for services. Infravio sets policies, which are tracked and managed to establish expected behaviors for services and define service relationships with users.

LISA places life-cycle testing into governance. iTKO and webMethods claim that the end result is better performance and reliability for SOA implementations. The combined solution will be jointly sold and marketed.

Second combination: HP Quality Center (formerly Mercury Test Director) combines with iTKO's LISA to add testing support within Test Director's workflow environment. Test creation and the staging process are now automated, and LISA reports the results.

Other benefits of the integration include regression build testing and scheduled testing from within the same test repository. Quality Center can

launch LISA tests as if they were command-line orders.

"Maintaining quality as an organization moves to a SOA

adds additional challenges to the exiting quality management environment," said Jason

Bloomberg, senior analyst at

analyst firm ZapThink. "By integrating iTKO LISA with HP Quality Center, QA personnel can leverage their existing skills

and processes while adding the additional tasks that SOA quality requires in an efficient, low-risk manner," he added.

Bloomberg believes that such partnerships will add to iTKO's competitive advantage and are critical at this point in its growth trajectory while it has the resources to invest. ■

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# Play With Fire...and You Just Might Learn

Watchfire's AppScan Enterprise 5 focuses on reducing complexity in app security

BY JEFF FEINMAN

With the release of AppScan Enterprise 5, Watchfire claims to have put bewildering security vulnerabilities into layman's

terms for developers.

Released last month, AppScan Enterprise 5 is the latest version of the company's Web-based security solution for Web

applications. AppScan Enterprise provides vulnerability scanning, reporting and remediation capabilities for Web applications. The newest version

introduces QuickScan, a new testing tool that simplifies security assessments for developers.

Dave Grant, vice president of security product strategies for

Watchfire, said, "We've implemented new functionality that makes it as dead simple as you can make it for developers to scan [their code]. We've built an interface, and a language around that interface, that makes it simple for nonsecurity experts to run a test for security applications."

Another new feature of AppScan Enterprise 5 is integration with Watchfire's computer-based training program, in which an organization's executives can monitor employee progress and course completion rates. In addition, AppScan Enterprise 5 now can work with Fortify Software's SCA Suite to show overlapping vulnerabilities on both the source-code and the application levels.

## GENERATES TASK LIST

QuickScan presents a Developer Task List that the company claims can enable developers to quickly understand what needs to be fixed to make a Web application secure. With QuickScan, Grant said, a security professional can set up the necessary scans that need to be run, and the developer directs AppScan to test the application. AppScan scans the application, and then generates the Developer Task List for QuickScan.

As an example of the developer-oriented results that QuickScan provides, Grant offered the following: "Developers would be told to 'filter out hazardous characters from user input field,' and then there would be an example of what those hazardous characters are, or [they would be given the recommendation] 'install the ASP.NET patch or module' instead of telling them about a cross-site scripting problem or SQL injection problem. Most people don't even know what application security is, let alone how to write secure code, so we have to bridge that gap."

AppScan Enterprise 5 has a number of new reporting features, including a more flexible framework that allows better searching and filtering, and more granular controls to lock down scanning and report access to protect sensitive security data. The offering also has a brand-new GUI that is better suited to developers, according to the company. ■

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# CA Merges SiteMinder With Wily Introscope

BY DAVID WORTHINGTON

CA is scoping out a new view for SiteMinder customers. The company has integrated Introscope, a product CA acquired when it bought Wily Technology last year, into SiteMinder, its network transaction gatekeeper. Introscope traces the path of transactions through network infrastructure, and aggregates data from policy servers and agents to evaluate performance.

Wily Manager for SiteMinder, released late last month, is the manifestation of CA's product integration strategy; it targets current Introscope customers.

"Wily Manager for SiteMinder provides support teams with an early warning system, enabling them to quickly detect, triage and diagnose issues affecting SiteMinder operation before end users are impacted," said Mike Malloy, vice president and chief marketing officer of CA Wily Technology.

SiteMinder works with existing directory services, establishing an authentication process. It serves as a gatekeeper and is configured with "visibility agents" for Web

servers, Web services and application servers that validate users' access to resources. Valid transactions are allowed to pass, while transactions that create performance bottle-

necks are identified and trigger alerts. Alerts run the gamut from on-screen warnings to SMS to e-mail, and provide a set of comprehensive performance metrics.

Introscope keeps tabs on the average response time to logins, successes, failures and socket availability for SiteMinder processes. Wily Manager for SiteMinder also monitors

SiteMinder Policy Server metrics and uses them in its overall performance metrics in Introscope. Those metrics include version, port, cache availability and cache size. ■

## GoDiagram Enters The Express Lane

BY DAVID WORTHINGTON

An "express" version of Northwoods Software's GoDiagram .NET control is being released in conjunction with its 2.6.1 update. The release targets students, hobbyists and start-ups within boutique markets.

GoDiagram helps developers using Windows Forms to construct interactive diagrams such as flowcharts, state diagrams, network organization charts, workflow editors and software design tools that are inserted into applications. It may also be used to express relationships in application data.

Version 2.6.1 adds support for Windows Vista and introduces new sample classes. Users can create subclasses of any class no matter what language is used.

GoDiagram Express is a simplified build of the control that is stripped down to a baseline of commonly used functionality. It is available free of cost. ■



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# Neurotechnologija Goes Large With Biometrics

MegaMatcher 2.0 adds multifactor recognition, performance improvements, multiprint scanning

BY P.J. CONNOLLY

The first technology that comes to mind for many people when discussing biometric identification is fingerprint recognition, but there are a variety of other methods. Biometric identification specialist Neurotechnologija recently beefed up its MegaMatcher SDK for large-scale automated fingerprint identification applications, by adding multi-method biometric recognition and faster algorithms that work together, to provide what the company claims are more accurate results than achieved by single-factor methods alone.

Neurotechnologija also claims that MegaMatcher 2.0's improved performance can cut hardware costs; as an example, the company says a MegaMatcher 2.0 cluster of 15 nodes can handle the workload of a 100-PC cluster running the previous version. "Our main advantage is identification speed," noted project manager and business-technical lead Irmantas Naujikas. "It's not tied to one hardware provider," he noted, which allows developers to use it in a variety of applications.

Other improvements in the new MegaMatcher release include a more accurate analysis that can cut the false rejection rate for fingerprint recognition to one-sixth of the previous version. When operating in the "multi-biometric mode," false rejections are cut to a tenth or less of those found previously, according to the Lithuania-based company.

MegaMatcher 2.0 also includes usability enhancements that facilitate the simultaneous scanning of multiple fingerprints, automatically separating them. It includes an API for editing templates of latent fingerprints, for applications in forensic analysis. MegaMatcher can now reject poor-quality fingerprints at the enrollment stage, and tolerates fingerprint deformation, rotation and translation, with the ability to match between flat and rolled fingerprints.

MegaMatcher 2.0 works with the company's products for embedded devices, FaceCell and FingerCell 2.0; it also can be used with the company's standalone VeriLook facial recognition and VeriFinger print recognition applications. MegaMatcher's components run on both Microsoft Windows and Linux, and the release includes .NET components to allow rapid prototyping with Visual Studio 2005 SP 1 against a wide range of hardware. The GNU C compiler can also be used if necessary.

MegaMatcher can run on a standalone server, or as part of a cluster, with each node in the cluster searching against a part of the master database, which can be Microsoft SQL Server, MySQL or Oracle. Images can be stored with Wavelet Scalar Quantization (WSQ) compression; the MegaMatcher SDK contains a WSQ library for compression and decompression, to reduce database sizes or accelerate intersystem transfers. ■

## MKS Adds Windows Vista Compatibility

BY JEFF FEINMAN

Application life-cycle management vendor MKS has added Windows Vista support to two of its products. It announced the release of MKS Toolkit 9.1 late last month and MKS X/Server 8.1 earlier this month.

MKS Toolkit provides developers with utilities aimed at helping programmers migrate Linux/Unix applications to the Windows platform as well as develop scripts for any repetitive task with Unix scripting on Windows. Although company officials admitted that many MKS Toolkit customers had skipped recent upgrades because they were satisfied with their existing software, they expect the Windows Vista compatibility of the new release to change that.

MKS Toolkit 9.1 includes an update of the gmake that MKS provides as a source code sample. Another notable enhancement is an update of the product's SSH

(Secure Shell) capabilities. There is also an enhanced Telnet client to provide support for single sign-on, which enables a user to authenticate once and gain access to multiple software systems.

"We've been around a long time, and we're committed to keeping our software compatible with changes in the operating systems," said Mark Funt, vice president of international sales for MKS.

Developers that need to port programs from the X Window System will benefit from the updated MKS X/Server, and there appear to be plenty of those applications, according to Funt. "A lot of the Unix applications that our customers ported to [Microsoft] Windows needed X displays and Motif to show up on a Windows platform," he noted. The demand for these features in Japan remains strong enough to support a version for that market, company officials noted. ■



# Microsoft-Led Group Vows To Make BPM Mainstream

## Accessible .NET BPM is alliance's goal

BY DAVID WORTHINGTON

Microsoft is gathering the Windows ecosystem around the discipline of business process management. In late February it announced the Microsoft Business Process Alliance, which initially includes a group of 10 partners that intend to make BPM tools and solutions more accessible outside of the enterprise.

The alliance is composed of ISVs that have made a commitment to the .NET platform. The current members are AmberPoint, Ascentn, IDS Scheer, Fair Isaac, Global360, InRule, Metastorm, PNMsoft, RuleBurst and SourceCode Technology Holdings. BPM vendors that have not committed to .NET or BizTalk Server are not eligible for membership.

According to Chris Howard, vice president and service director for application platform strategies at Burton Group, the list of affiliates covers multiple dimensions of the BPM problem space, from modeling to Web services management.

### 'FORTUNATE 500'

Steven Martin, director of product management in the Connected Systems Division at Microsoft, refers to enterprises that have rolled out BPM as the "Fortunate 500." Martin and his team want small and midsize businesses (SMBs) to experience the benefits of BPM, without the cost, complexity and connectivity challenges. Microsoft and its partners seek to achieve this by providing processes that do not limit functionality or require custom integration.

Research from Gartner indicates that SMBs are good candidates for BPM solutions. A February 2006 report titled "Research Agenda and Key Issues for Small and Midsize Businesses, 2006" found that SMBs must support many of the same business processes as large enterprises and that these firms prefer vendors that understand their constraints.

Microsoft has also announced that it will support the oft-delayed OASIS WS-BPEL (Web Services Business Process Execution Language) 2.0 specification in the Windows Workflow Foundation (WF) part of .NET 3.0. WS-BPEL provides mechanisms to direct business processes in Web services.

WS-BPEL 2.0 extends the original specification with dynamic, parallel invocation of services and support for richer language constructs. IBM and Oracle have already adopted it in commercial software.

A number of Community Technology Preview builds featuring WS-BPEL 2.0 support will be released until its support

is finalized in a .NET refresh scheduled for release by the end of the calendar year. The .NET refresh is a component of Orcas, the next-generation Visual Studio.

"The new BPEL support in Windows Workflow is good, even though BPEL itself is a lowest-common-denominator specification. It will at least enable companies to use existing, pre-.NET BPEL declarations to accelerate WF-based solutions. At some point...users will be locked into the .NET stack. This is not unlike other vendors, of course...like IBM with the Rational tools," said Burton Group's Howard.

Howard concluded, "In theory, BPEL provides some portability of behavioral definitions, but only at early stages of modeling. BPEL on its own is not sophisticated enough for most complex behaviors." ■

## BI FOR END USERS SIMPLIFIED WITH NEW ISCOPE

BY DAVID WORTHINGTON

Operations managers use key performance indicators (KPI) and other data as the basis for making business decisions. For instance, accurate sales figures and current inventory levels are necessary to determine future production, which can affect margins.

Domain experts and typical business end users can use Data Block technology in InetSoft's new iScope to dynamically construct, transform and federate data from disparate sources such as data warehouses. Data Blocks can be constructed collaboratively, with other users, from a spreadsheet-like interface.

This permits iScope to create end-user-assembled data mashups that visualize data exploration. Data items are dragged and dropped by the user to create viewsheets that have KPI dashboards and can be used to carry out multidimensional analysis for data aggregation and detail definition.

If the data source is an input type, iScope automatically selects the graphic output for the item, such as a chart or table.

"As performance management becomes more closely intertwined with operations, business intelligence itself is moving ever closer to operations," said Luke Liang, CEO of InetSoft. "By visually exploring dynamic data, feedback and input to operations and business managers can be immediate." ■

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# Mono's VB Compiler Enhances Microsoft Interoperability

◀ continued from page 1

dows Forms 2.0 closer to the end of the year," said Rego.

"Mono offers the means to run .NET technology, which has shown itself to be a credi-

ble alternative to Java," said Andrew Jaquith, analyst and program manager at research firm Yankee Group. "[But] with Java going open source, some of the appeal of Mono—

its openness—is going away."

While Jaquith sees Mono as a useful technology, he doubts that its new Visual Basic compatibility will spur enterprises to consider the

project. "I think Mono's relevance to the enterprise is limited, and running VB applications does little to change that," said Jaquith. "Most developers who like Micro-

soft technology will run it on a Microsoft operating system—rather than an alternative platform where things may, or may not, work. Besides, with all of the saber-rattling [Microsoft CEO Steve] Ballmer has been doing about open source and Linux, why enter what Microsoft would have you believe is a legal minefield?"

## NO ENTANGLEMENTS

But legal issues related to Microsoft's intellectual property are no longer an issue for Novell, noted Carlos Montero-Luque, vice president of product management for Linux and open platform solutions at Novell.


He said that initial concerns over the legality of the agreements Novell signed with Microsoft in November have been put to rest. "We have always believed that the agreement was fully in compliance with GPLv2. As it turned out, that's correct," said Montero-Luque. "This has been confirmed by the Free Software Foundation."

Novell's intellectual property agreements with Microsoft allow for independently developed software donated to the OpenSUSE project to be exempt from issues arising from the infringement of Microsoft's intellectual property, in the interest of fostering compatibility and interoperability.

Further work on facilitating the interoperability of SUSE Linux and Windows will be arriving later this year. Montero-Luque said that the first of a number of interoperability road maps will be announced this month. This road map will detail the first steps for Novell's creation of Web services management tools for working with WS-\* specifications, in conjunction with Novell's own Web services offerings.

Later in 2007, details of directory interoperability, as well as virtualization management systems, will be given. Though Novell and Microsoft will be building their own tools for each of these tasks, the companies are still collaborating on the creation of these road maps. ■

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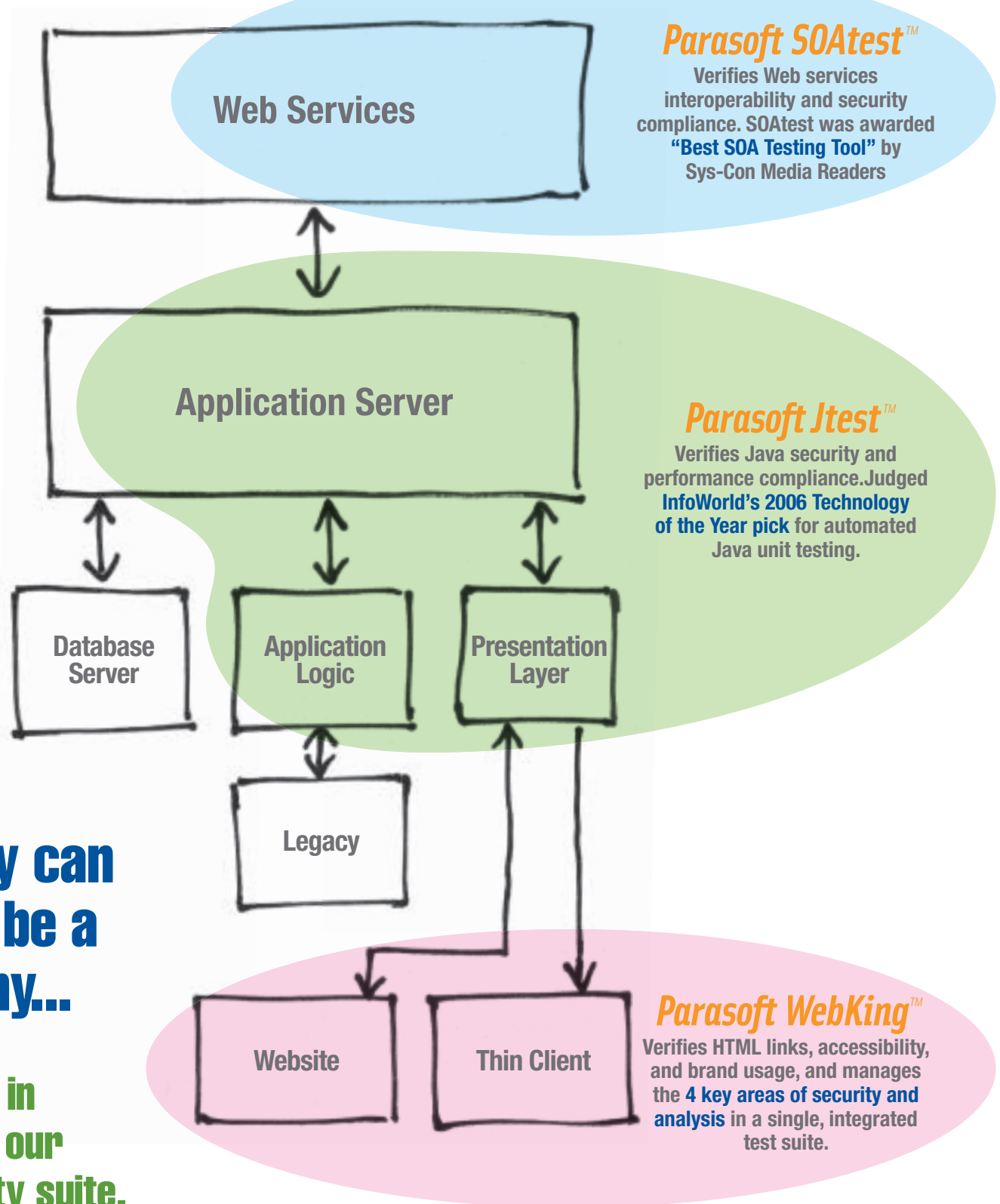
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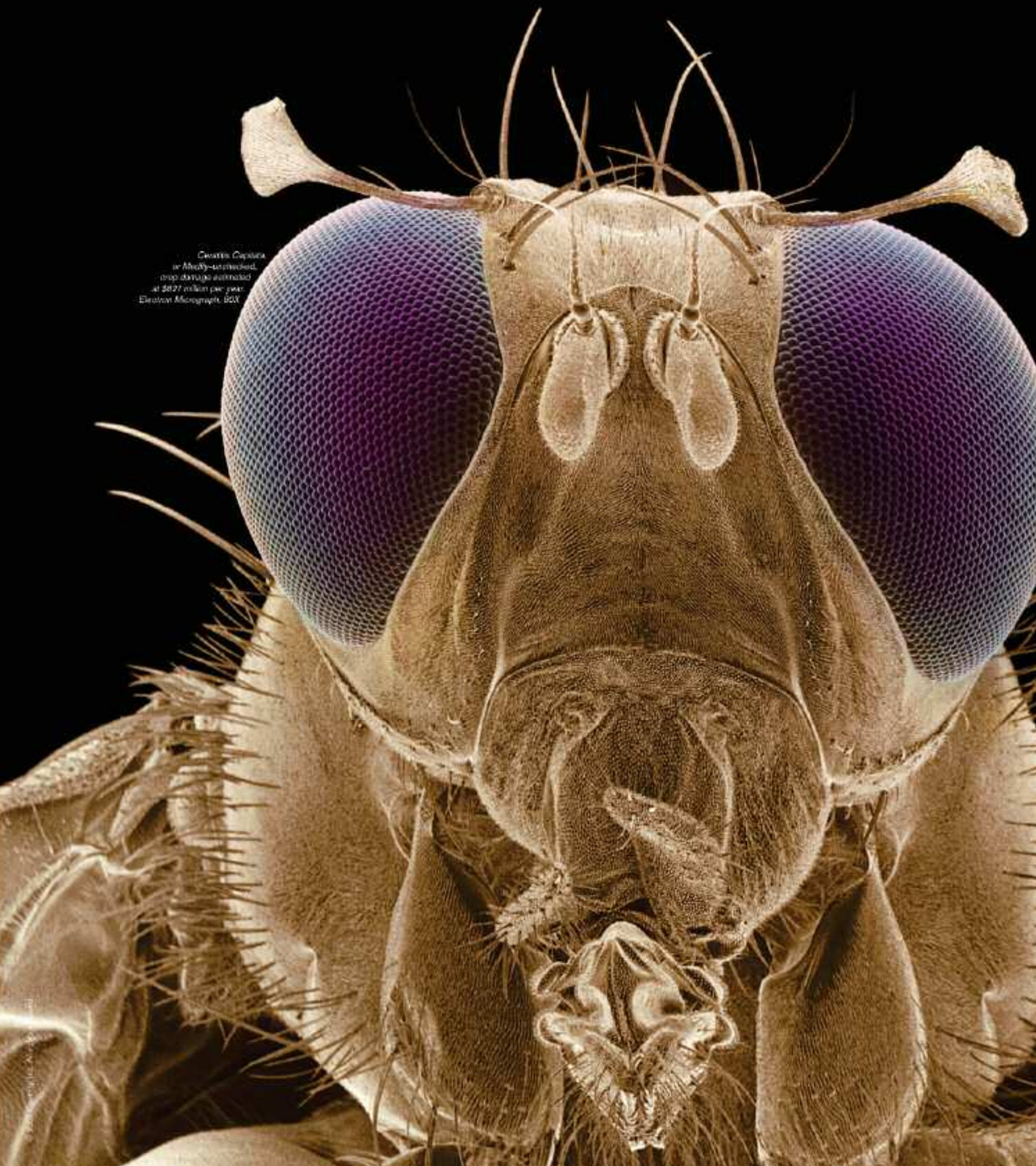
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# Seapine QA Wizard Goes Pro

## Automated test tool adds Windows Vista compatibility, central control repository

BY JEFF FEINMAN

Imagination has spawned many great wizards, including Merlin, Gandalf and the ones from Harlem that do fancy tricks with basketballs.

In the world of automated testing, Seapine Software has a wizard of its own, and recently equipped it with new tricks such as Windows Vista compatibility and a central repository for controls. QA Wizard Pro was announced on March 6, and is slated for



Companies want the ability to move to Vista when they're ready, says Seapine's Riccetti.

general release at the end of the month.

Adding to the automated testing and multiplatform functionalities of previous QA Wizard releases, the new version's central repository removes the need to recreate controls and scripts. QA Wizard Pro also has enhanced debugging capabilities, as well as compatibility with Windows Vista and Internet Explorer 7.

Richard Riccetti, president and CEO of Seapine, said, "Vista adoption is not progressing as fast as everyone thought it would, but there are companies out there who are looking at that. They say, 'Either we're going to move to Vista now, or we certainly want the ability to move to Vista when we're ready.'"

Tom Carozza, director of strategy for Seapine, said that QA Wizard Pro's architecture is based on .NET technology, which enables it to offer playback scripts much quicker than previous releases.

Other new features in QA Wizard Pro include the ability to work with Trolltech's Qt, a cross-platform application development framework that has a C++ class library. Trolltech, based in Norway, provides development tools and consulting services, with Qt as its flagship product. ■

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Windows-only	Available for Windows, Linux, Macintosh
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Dialogs for common Ruby tools (Gem, Rake, Rails)	Command-line access to Ruby tools

# Ruby Joins Big Leagues With Two IDE Updates

◀ continued from page 14

nient and helpful. Surprisingly, Ruby in Steel has better support for developing larger Ruby projects than the more mature, well-regarded Komodo. Ruby in Steel's superior implementation of code completion, navigation and dialogs for Rails, Gems and Rake combine with Visual Studio's project-oriented model to create a compelling system for larger-scale Ruby development, especially Rails-based. Komodo loads slightly faster, and its superior console and debugger give it an

advantage for scripting. However, both products are fast and much, much more productive than command-line development. The real decision between the two almost certainly boils down to your cross-platform development needs and whether your history is with Visual Studio or with vi and Emacs. Those with a Linux/Unix background will do well with the latest release of ActiveState's Komodo. Those with a Visual Studio background will be pleased with the strong rookie that is SapphireSteel's Ruby in Steel. ■

## Need reporting capabilities for your SOA projects?



The need for business agility is reshaping the way that technology is deployed today. A Service Oriented Architecture (SOA) approach helps businesses move quickly in the direction they choose, but unless organizations have visibility into the state of the business, they can't make the right decision regarding which direction to take.

Effective reporting is an essential complement to the SOA approach. Based on the popular open source Business Intelligence and Reporting Tools (BIRT) project from the Eclipse foundation, Actuate BIRT meets the SOA reporting challenge with a visual designer and embeddable reporting engines.

Actuate BIRT has been integrated into the Rational Software Platform to easily enable SOA solutions that give business users all the flexible HTML and pdf reporting they need for complete visibility into their business processes.



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# Redmond Removing Barriers to Vista

◀ continued from page 1

While a variety of culprits can make applications incompatible in Windows Vista, its User Account Control (UAC) security layer may cause applications that require administrator-level permissions to fail. Previously, many legitimate applications were programmed with the assumption that the user had these rights and would not run otherwise. UAC runs applications at varying permission levels and provides file and registry virtualization for applications that require what would otherwise be a dangerous degree of access.

"Just like developers assumed that every user would be an administrator, some corporate developers would have made the same assumption," said Michael Cherry, lead analyst for Windows at analyst firm Directions on Microsoft.

If anything, Cherry faults Microsoft for not taking UAC far enough. "Microsoft should have taken an even tougher line on User Account Control...[but instead] is always balancing backwards compatibility with security. It could have held the line and gotten users to fix their applications. If not now, when? If an application doesn't work with User Account Control, we are talking about bad programming."

## VIRTUALLY COMPATIBLE

Some programming is not bad—it's just incompatible. That may lead users to virtualize other operating systems within Windows Vista. Microsoft's solution is Virtual PC 2007 (VPC), which will run legacy or custom applications under a sandboxed software environment, with 64-bit Windows Vista support; the company claims that performance is better than earlier versions of VPC. Virtual PC 2007 also allows full use of network hardware that offers the Preboot Execution Environment for remote bootstrap support.

Cherry emphasized the importance of virtualization in enterprise deployments of Windows Vista, stating that the onus is on developers to balance the utility of the application against the work needed to make it work under Vista. "Using a virtual machine is often better than mucking with it. If you can't

change the application, run it in a virtual machine," said Cherry.

Other tools are aimed at deploying Windows Vista itself: It will not run, or run well, on hardware that does not meet or

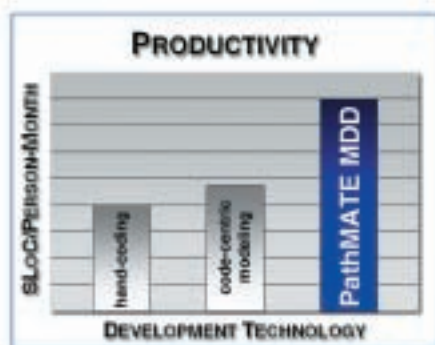
exceed its credentials, and some devices are simply incompatible. Windows Vista Hardware Assessment 1.0 is tasked to filter out unqualified PCs. The tool runs over networks.

Microsoft Solution Accelerator for Business Desktop Deployment 2007 deploys Windows on qualified PCs.

Every instance of Windows Vista must be "activated" subse-

quent to its installation. Two options exist for enterprise activation: the Volume Activation Management Tool and the Key Management Service for Windows Server 2003. The former centrally manages and automates activation using a multiple activation key, and the latter hosts activation as a local service. ■

## DEFENSE SYSTEMS DEVELOPER DOUBLES SOFTWARE ENGINEERING PRODUCTIVITY



In an in-house study of several real-time software development projects, a leading defense systems supplier found that using architecture-focused Model Driven Development (MDD) technologies doubled total productivity when compared to code-centric approaches. Individual projects observed gains from a minimum of 30% to well over 200%.

The key factor in these gains was Model Driven Development technology based on PathMATE™ from Pathfinder Solutions and IBM® Rational® Software Modeler (RSM).

While projects following code-centric approaches struggled, software and systems engineers utilizing PathMATE and RSM reported substantially higher levels of productivity and up to 90% quality improvement within the first 9 months of use. Productivity was measured by source lines of code per person-month and quality by defect report at system integration.

RSM from IBM provides an open and rich UML 2 environment for expressing platform independent service-oriented architectures for embedded, real-time, and high performance systems. The PathMATE

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# SCO v. IBM Case Doomed, Experts Say

◀ continued from page 1

IBM misappropriated code in violation of its contract with SCO—is “a complete loser,” said Carey. “The IBM contract expressly permits IBM to develop competing products using the very personnel who have had a look at the Unix source code.”

Compounding SCO's legal troubles is its weakening financial position. The company has an accumulated deficit of \$250 million, noted Carey. Share prices have ranged from a 52-week low of 85 cents and a 52-week high of \$5.23, and were trading at about \$1 in late February.

If SCO loses the case, the most it can hope for is a four-man office to collect license fees on legacy Unix installations, Carey said. “There will be no more R&D and no new products.”

SD Times offered SCO the opportunity to respond to Carey's comments by e-mail, but SCO did not reply. Nor did the company respond to a request for a phone interview.

## FREE FALLING

Despite CEO Darl McBride's continued optimism about SCO's Unix business, the company's financials provide a different outlook.

The SCO Group reported a continued decline in earnings for its first fiscal 2007 quarter, posting US\$6.01 million, down from \$7.34 million from the same quarter a year ago. Meanwhile, net loss for the quarter was \$1.02 million. That, however, was an improvement from a net loss of \$4.58 million from the same year-earlier period. “We are committed to our Unix business, introducing new mobile services and defending our intellectual property rights through the legal system,” McBride said in a statement.

SCO did manage to get its legal costs in connection with the IP lawsuits down to \$654,000 for the quarter, a marked improvement over the \$4.01 million spent in the comparable 2006 quarter.

## 'INTENSE ANTAGONISM'

In an effort to stem its financial losses, SCO launched new mobile product offerings last summer, including HipCheck, an application that lets IT managers monitor network problems from a cell phone.

In-Stat principal analyst Bill Hughes said that SCO's new mobile product offerings launched last summer are worth looking at, and that he does not believe the company's legal troubles will have a negative impact on potential buyers.

He also described as unwarranted the ill will SCO has generated within the industry, noting the company has been the recipient of “intense antagonism.”

“Frankly,” Hughes said, “there has been lots of emotion about the lawsuit, and not much rational discussion about it.” Even if the mobile initiatives fail, and SCO goes out of business, the lawsuit would continue, he said.

SCO v. IBM cannot go to trial until a related case, SCO v.

Novell, is decided. SCO sued Novell in January 2004, alleging that Novell had falsely claimed that it controls the Unix operating system. The dispute dates back to a 1995 licensing deal between the two companies. SCO claims the deal gave SCO control over Unix copyrights. Novell says it retains the copyrights to Unix, and, as a result, there is no merit to SCO's claims against IBM.

SCO v. Novell is expected to go to trial in September. Bromberg & Sunstein's Carey said Novell's claim that it owns Unix seems unlikely to prevail.

The details of both cases have been chronicled at length by Pamela Jones on her www.groklaw.net blog. Groklaw includes thousands of articles and documents related to the SCO lawsuits and has a strong anti-SCO bent.

In the latest twist in the ongoing saga, SCO is taking aim at Jones, seeking to take a deposition from her, according to a Feb. 13 report from Forbes.com titled “SCO vs. Blogger.” According to the report, SCO officials want to

depose Jones because they believe her Groklaw blog is acting as a front for IBM.

Enderle said he doesn't believe IBM is behind Groklaw. But who Jones is and how Groklaw is funded are legitimate questions. “There is a significant voluntary effort behind the site, and it is not apparent where the money comes from,” Enderle said.

Her identity has remained a mystery since she launched the site in May 2003, noted Enderle. Jones did not respond to a request for an interview with SD Times.

In the long run, who she is won't matter, Enderle said, because he, too, believes SCO has no future. The question of whether its mobile offerings will gain traction is moot, because customers don't want to do business with a company tied to the lawsuits.

“Is SCO dead?” he asked. “No, they are not dead yet.” ■

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# How Serena Entered Another Dimension

BY JEFF FEINMAN

Already a bigwig in mainframe ALM tools, Serena Software grabbed the opportunity that arose in 2004 to acquire Merant's distributed ALM offerings. In an integration period that involved dozens of people from both Merant and Serena, said Carl Theobald, senior vice president of products for Serena, the company bolstered both its distributed ALM tools and market share.

By acquiring Merant, Serena removed a larger competitor from the marketplace and gained an edge on market leader IBM. According to 2002 revenue figures from IDC, IBM Rational was raking in US\$286 million, Merant was second at \$102 million, and Serena was third at \$89 million. After the acquisition of Merant, an IDC study showed that Serena grew in revenue and was up to \$224.7 million by 2005, with a 19.1 percent share of the overall ALM market.

Integration begins well before an acquisition, according to Theobald, when a company for-



Serena's Theobald, right, discusses the Serena-Merant merger with co-workers.

mulates a strategy, which he said should be based off of customer feedback and market needs.

"The technology constraints are also a factor; [the] architecture and codebase need to be incorporated, because they could affect the ability to execute and the potential cost for integration," he said. "Those should be looked at prior to the acquisition. So I'd say step one is the business model—finding out what makes sense—and step two is the technical aspect: Is it feasible; is it cost-prohibitive?"

Theobald pointed out that

after speaking with customers and determining their needs, it is very important to move quickly on an acquisition once the investment levels are right.

After Serena acquired Merant in March 2004, Serena officials set up integration teams to discuss sales structure, marketing plans and product strategy. In the ensuing six months, the company released products that combined elements from both Serena and Merant, including TeamTrack 10, which replaced Merant's Tracker, and ChangeMan Mover, the former Merant

Mover release management solution. In addition, an October 2004 release of Merant's former flagship Dimensions featured enhanced build management capabilities due to an integration with the Merant Build tool.

Theobald said that rather than using so-called "glue code" to bring compatibility to the products, Serena chose to use Merant's Dimensions requirements functionality and codebase as the foundation to write new organic code, incorporating "best of" functionality from Serena's existing ChangeMan DS and RTM products. Theobald said 150 engineers were involved in creating the new code, along with approximately 50 beta customers.

Dimensions 10 is now the backbone of Serena's ALM offering. "Dimensions 10 is one of the greatest successes that came out of the acquisition," claimed Theobald. "In many ways, it represents the synergies of bringing the two companies together." ■

## Artisan Studio: Full SysML

BY JEFF FEINMAN

Artisan Software, a provider of modeling tools, announced Artisan Studio 6.2 in mid-February.

One of the key ingredients of the Artisan Studio 6.2 suite is its compatibility with SysML (Systems Modeling Language). SysML is geared specifically toward systems engineers, being smaller and easier to apply than UML. Artisan Studio 6.2 supports modeling functions such as item flows, ports and port flows.

Version 6.2 has added new SysML diagrams for requirements and an internal block diagram, which allows developers to view a system in a dissected manner.

Product manager Fraser Chadburn said Artisan uses a "private sandbox," enabling multiple engineers to work in isolation on the same model. "If you think of how people used to develop at the code level, particularly in teams, you need to work by parallel development. The same issue exists at the model level." ■



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# Have Developers Become The New Police?

Princeton professor Edward Felten discusses freedom to innovate



BY DAVID WORTHINGTON

The entertainment industry has wrestled with illegal file-sharing since the late 1990s. It often seems diametrically opposed to anything but the most rigid restrictions on digital media. The Digital Millennium Copyright Act (DMCA) was born out of that environment, and though time has passed, the effects of the DMCA are still felt.

There are even some unforeseen externalities: Some Web 2.0 developers have taken on the role of the police, making sure that content published on their services does not violate copyright laws. The DMCA has even affected developers in segments other than digital media: Programmers attempting to make software interoperable have found themselves in the courtroom.

In a recent example, BnetD.org was targeted by Blizzard Entertainment because its "BNETD" game server inter-operates with Blizzard video games, and cell phone carriers have sued cell phone "unlocking" services.

We sat down with Edward Felten, professor of computer science and public affairs director of the Center for Information Technology Policy at Princeton University, to discuss developers' freedom to innovate, the DMCA and what responsibility developers have to ensure that their products are compliant. Felten publishes the Freedom to Tinker Web Blog and is an associate of the Electronic Frontier Foundation (EFF).

**SD Times: What topics compel you to speak out?**

**Edward Felten:** I have been writing a bunch lately about AACS [Advanced Access Content System], the next-generation DVD copy protection and

e-voting. The broader issue here is about copy protection technology—attempts to use software to enforce legal rules—that's part of the issue.

The other thing going on with AACS is standardization. AACS is the result of a security standardization process. We can learn things about how these efforts turn out and the kind of mistakes they make. The big-picture things we have learned in the context of AACS is what happened with DVDs. There, they had a security standard that was pretty terrible.

For example, they invented their own encryption method; that was not a smart thing to do and easily broken. Studios made a lot of money [on DVDs] and may not even have needed copy protection. It was a technical failure. They were throwing a lot of expertise and design resources at this impossible goal.

So you end up with a system that is relatively expensive to implement and still comes no closer to solving the goal, or not much closer than the really terrible system before. The set of industries coming to agreement on this standard didn't stop and say, "Hey, wait a minute, this won't get us what you want." Instead you have a requirement for every HD DVD and Blu-ray.

**Why is that something that should concern software developers? Are the EFF and you advocating for anything that would affect software developers?**

The effect is generally working to protect the ability of developers to develop products that are compelling to customers and technically well designed, without interference from the law or lawyers. There is an increasing trend toward legal regulation of software. We are trying to maintain the freedom of developers. There are some topics related to regulation

encrusted around copyrights, like what obligation a software developer has to redesign the products, to prevent bad actors from misusing their product.

Some of the things the entertainment industry is asking for are not really possible or effectively achieved, yet they are still asking software developers to do these things.

**Has there been any traction in the effort to get lawmakers to modify the DMCA?**

There has been some traction, but they are not doing it imminently. They recognize there is a problem, which is that it is over-broad and prevents some legitimate work from being done. It is politically difficult to reopen negotiation, and would be a protracted negotiation with many parties. Modifying one part may mean reconsidering the whole thing. Sometimes problems like this cannot be fixed even when Congress recognizes them. That may be where we are here.

**How important is reverse engineering to innovation, and how does it relate to the DMCA?**

Reverse engineering is one of the central methods people use to get products to work with one another. It is really the same as debugging—the same tools and methods are used to reverse-engineer other people's code. If they are making their code work with someone else's, you are talking basically about reverse engineering. [Developers] are looking at the code they produced, and sometimes the object code. It is central to how software developers in the industry work.

There have been a number of lawsuits that relate to interoperable products. One example is the BNEDT case [Davidson & Associates v. Internet Gateway]. People were making a server that would interoperate with client game software made

by Blizzard Entertainment. Blizzard sells the client software and lets it connect to services for free. They made an interoperable open source server that would connect to the servers. Blizzard sued. A big part of the case was: Are [BNEDT developers] entitled [to access]?

System administration tools are another example. Can you make your own software that lets you do system administration tasks on someone else's product? Can you write software that checks up on the health of that server and invokes its diagnostics functions or creates new users and accounts, or does the customer have to go to the maker of that original software to get tools?

The freedom to interoperate is entangled with reverse-engineering issues. Legal attacks on reverse engineering are used to stop people from making inoperable products. I feel that it is important to be interoperable without necessarily getting permission from the vendor.

**How will that affect innovation and experimentation among vendors creating Web services?**

There are several different ways the rules could be structured about those situations.

Should the developer make a reasonable effort to remove the inappropriate materials, or do they have to look at and filter all of the material to make sure that bad stuff never shows up? At best it raises the cost of developing the site or tool. At worst they are being asked to do something that cannot be done. If that is the case, we are basically being told that there are entire categories of products that cannot exist.

If YouTube had to remove trademarked products in any video, they would not be able to run a service like they do. Taking down undesired content once it is pointed out is a much more innovation-friendly approach. Mashups compound the problem: The rules are not always clear to start with.

If someone posts a verbatim copy of a show on YouTube, there is no doubt they are not allowed, but a pretty creative mashup that takes a small piece may or may not be legal. It's tough to put developers in that position. The legal question is a close call. In effect, the developer is turned into the police. It is certainly not something developers are well trained for. ■

## Going For The Top Of Semantic Web

BY JEFF FEINMAN

Semantic Web tool company TopQuadrant in late February released TopBraid Composer 2.0 with the ability to manage multiple inference engines, as it now has integration capabilities with open-source and company-made inference engines.

In addition, the offering lets users run Simple Protocol And RDF Query Language (SPARQL) queries—using W3C-proposed standards for querying an RDF-based semantic data store—on top of a description logic reasoner. A description logic reasoner is designed for work with OWL (Web Ontology Languages) and Description Logics, key design components of Semantic Web ontologies.

"These inference engines allow you to take any arbitrary data structure and still make sense out of it," said Holger Knublauch, vice president for product development at TopQuadrant. "You can really just download any model from the Semantic Web, and use the inference engines to insert and integrate these models with the models of your own applications. That's something that I don't think can be done with traditional software development approaches."

TopBraid Composer 2.0 is compatible with Resource Description Framework (RDF), a syntax for expressing Web page data in XHTML, and Gleaning Resource Descriptions from Dialects of Languages, both of which allow metadata to be embedded into existing HTML pages as mashups. Also, TopBraid Composer 2.0 has integration capabilities with XML and relational database management systems.

When asked what needs to take place for Semantic Web technology to continue growing, Dean Allemang, chief technology consultant for TopQuadrant, said, "We've moved from being an industry filled with components that just reached maturity to an industry where you have these matured components and an infrastructure that lets you put them together, without having to go down to the assembly level to stitch them together." ■



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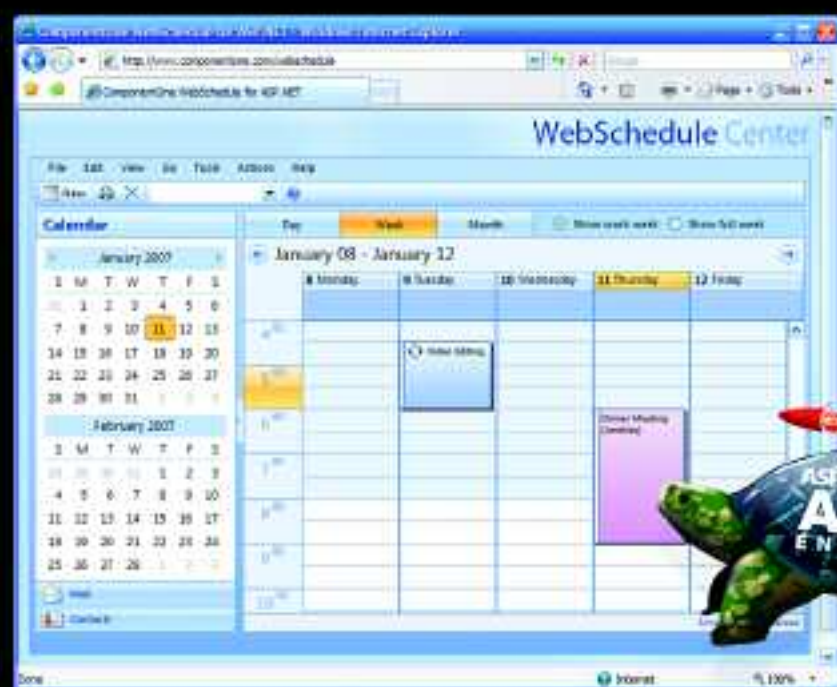
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# Microsoft Gets Smart About Mobile

Phones get Windows Mobile 6, low-end devices get .NET Micro Framework

BY P.J. CONNOLLY

Two major international events in February saw Microsoft pull the wraps off its next-generation mobile Windows platform in Barcelona, Spain, and then two days later in Nuremberg, Germany, announce the release of the .NET Micro Framework SDK, extending the reach of the company's development platform into resource-constrained devices.

The Windows Mobile 6 smartphone software is expected to be generally available in the second quarter, with devices from Orange in Europe, Softbank in Japan and T-Mobile in the United States. Current T-Mobile Dash owners will be able to upgrade their devices from Windows Mobile 5.0 to the new version. Other carriers will follow and are expected to expand their Windows Mobile device offerings.

Windows Mobile 6 offers an improved user experience by adding the ability to view, navigate and edit Excel and Word files in their original formatting, and the ability to view PowerPoint presentations on the device. It also provides users with an improved e-mail experience through HTML e-mail support and new Direct Push technology that offers automatic synchronization of Outlook calendars, contacts and tasks via Exchange Server.

Application developers can take advantage of the built-in compact versions of the .NET Framework and SQL Server; Windows Mobile 6 adds support for Microsoft's information rights management technology, to control access to sensitive corporate data. Other device security features allow the remote wiping of a lost or stolen phone, and the encryption of removable storage cards.

## .NET GOES MICRO

Developers looking for an easier means of developing applications for the smallest of embedded devices got an early Valentine on Feb. 13, when Microsoft announced the immediate availability of the .NET Micro Framework SDK. The new framework is targeted at devices that use the ARM7 and ARM9 processors, and occupies a min-

imum of 256KB of RAM and 512KB of flash ROM.

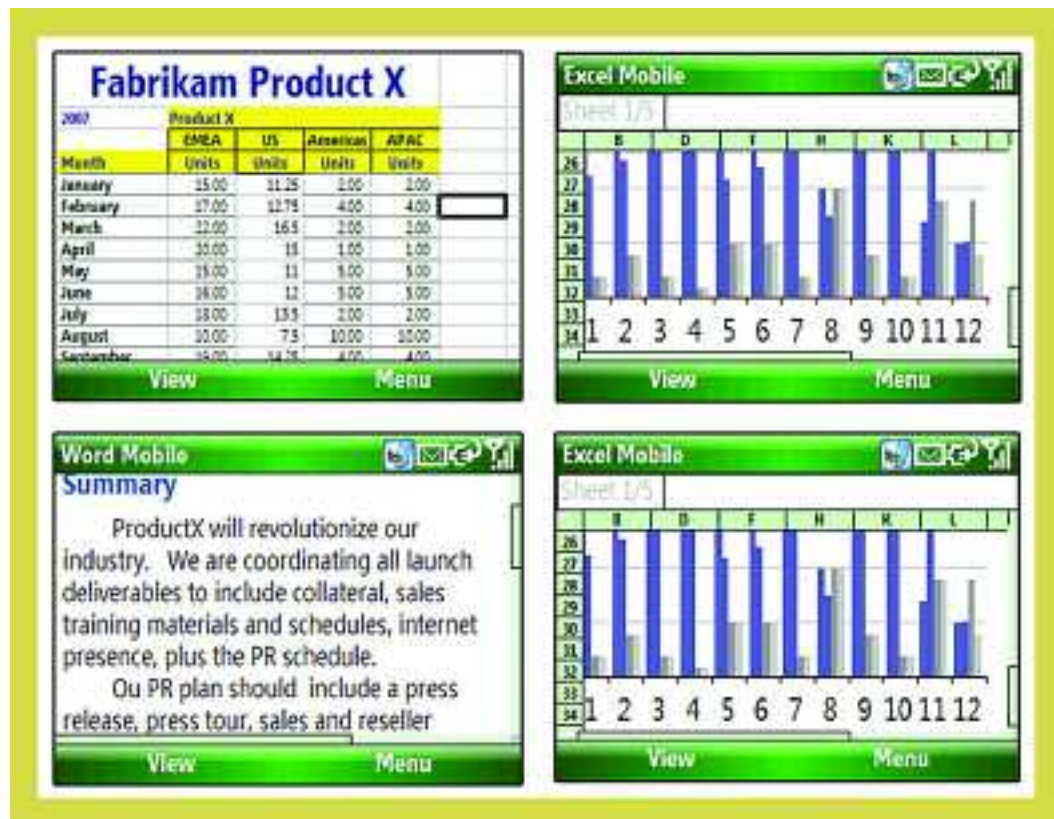
The .NET Micro Framework SDK—technically version 2.0—allows developers to build applications using C# and Visual Studio 2005 Standard Edition, and includes an extensible device emulator. It fills out the .NET strategy for embedded devices that lack the resources to support applications built to use the company's .NET Compact Framework, for PDAs, smartphones and more-capable set-top boxes. Developers can take advantage of the on-device subset of the Common Language Runtime, and write device drivers and interrupt routines for standard interfaces.

At the same time as the announcement of the SDK's availability, a number of partners announced their plans to support the .NET Micro Framework.

Digi International announced the release of its Digi Connect ME development kit, with I/O components including Ethernet support, serial port access and general-purpose I/O signaling; meanwhile, Embedded Fusion announced the Meridian CPU, a core module that includes a Freescale i.MXS processor, RAM, flash memory and the .NET Micro Framework onboard. Freescale introduced its own development kit for .NET Micro Framework, and Rhode Consulting unveiled its FlexiDis evaluation kit, which combines Atmel ARM7 and ARM9 processor cores, flash memory and SDRAM, with a QVGA display for cases that require an embedded human-machine interface or other means of visualization. ■

BY P.J. CONNOLLY

Canoo Engineering on Feb. 19 released a mobile version of its Java development library for Web 2.0 applications, UltraLightClient (ULC) Mobile 1.0. It runs on Java ME devices with the same API as the full Canoo ULC 6.1, allowing developers to write for both mobile and desktop platforms with minimal code changes. ULC Mobile requires the



The slick interface of Windows Mobile 6.0 allows developers to create richer mobile applications.

## Wind River Picks Up RTLinux

Buys rights from FSM Labs, will offer as add-on

BY P.J. CONNOLLY

Wind River Systems in February announced that it had acquired the intellectual property for RTLinux from its developer, Finite State Machine Labs. RTLinux is billed by Wind River as the only commercially available Linux platform for so-called "hard real-time" applications, such as automotive, industrial or medical instances with absolute time requirements. RTLinux allows developers to take advantage of the high-per-

formance responsiveness of a hard RTOS, while using the general-purpose capabilities of Linux in filesystem management, networking and similar functions.

Wind River noted that RTLinux rounds out the company's real-time portfolio, without encroaching on its VxWorks real-time-only operating system, or on its soft RTOS, Wind River Linux. The company expects to integrate RTLinux technology in future releases of its consumer device

and network equipment platforms, and to release the RTCore technology as an integrated add-on product called Wind River Real Time Core.

Wind River will also grant FSM Labs the necessary rights to continue developing commercialized implementations of RTLinux. Wind River has no specific plans for refreshing the GPL version of RTLinux, although it has pledged to consider the issue once RTCore is built into the rest of the product line. ■

## Canoo's UltraLight for Java Goes Mobile

BY P.J. CONNOLLY

Canoo Engineering on Feb. 19 released a mobile version of its Java development library for Web 2.0 applications, UltraLightClient (ULC) Mobile 1.0. It runs on Java ME devices with the same API as the full Canoo ULC 6.1, allowing developers to write for both mobile and desktop platforms with minimal code changes. ULC Mobile requires the

CrE-ME 4.10 JVM from NSIcom, and bundles in a number of sample applications, including an online shopping demo; developers are strongly advised by Canoo to set up their IDE for JDK 1.3.1 compatibility when developing for this release.

ULC's caching and "lazy loading" features are particularly suited for mobile applications; the company claims

ULC fills in the gap between a server-side architecture and Java Swing. ULC Mobile 1.0 uses CrE-ME's variant of Swing 1.1.1 to handle GUI display, and developers can use Windows 2000 or XP with the CrE-ME JVM emulator in the absence of the target hardware.

Although ULC Mobile applications can be deployed as applets to devices running

versions of Microsoft's Internet Explorer, Canoo doesn't recommend this for anything mission-critical, due primarily to limitations in the CrE-ME applet plug-in.

The maximum heap memory is fixed at 64MB, while the applet cache lacks a way to gracefully shut down unused applets that are hogging the virtual machine's heap memory. ■





## Introducing Time-lapse View, a productivity feature of Perforce SCM.



Perforce Time-lapse View

Time-lapse View lets developers see every edit ever made to a file in a dynamic, annotated display. At long last, developers can quickly find answers to questions such as: 'Who wrote this code, and when?' and 'What content got changed, and why?'

Time-lapse View features a graphical timeline that visually recreates the evolution of a file, change by change, in one fluid display. Color gradations mark the aging of file contents, and the display's timeline can be configured to show changes by revision number, date, or changeset number.

Time-lapse View is just one of the many productivity tools that come with the Perforce SCM System.



# .NET or Not .NET

Sometimes, the enterprise database is simply overkill. For whatever reasons, developers will occasionally choose to embed a database into an application rather than rely on a dedicated database server. But when performance is more important than scalability, an embedded database is often the best choice.

Although the embedded database arena is a crowded one, one way to simplify the discussion is to consider two of the 800-pound gorillas in the space. On the one hand is Microsoft, with a pair of embeddable databases with their roots in the company's SQL Server. On the other, stands the Java DB, an open-source database that has survived years of neglect and is finally coming into its own with a lot of help from IBM and Sun Microsystems.

Realistically, few if any developers choose between the two platforms based on features or performance. Logic indicates they likely will pick one or the other according to their prejudices, or those of their bosses. If the shop codes with Visual Studio for boxes running Windows, then in all probability, SQL Server Compact or Express will be the runaway favorite.

Conversely, if one's target community isn't a Microsoft-based ecosystem, it probably makes more sense to go with Java DB. Michael Coté, industry analyst at technology strategy firm RedMonk, agreed: "As far as SQL Express and Derby go, to be frank, the primary differences are [whether] you're a Microsoft developer or a Java developer."

Coté continued, "It's not like Oracle, or MySQL, where it's not so much a language choice as it is an infrastructure choice. In the embedded database world, between [Java DB and SQL Server Express], it's more just about whichever language you program in."

Nevertheless, the comparison between the product of a near-monolithic business model and the result of a community-driven effort illustrates the differences between the two processes. The timing's right, as well: Java DB is expected to show up in an increasing number of applications thanks to its inclusion in Sun's latest Java developer tools, while Microsoft recently refreshed the SQL Server Compact and Express versions with features from SQL Server 2005 SP2.



## That remains a fundamental question when choosing embedded databases

BY P.J. CONNOLLY

Coté noted that two general applications exist for embedded databases: "First, if it's embedded in handheld things or actual devices." Databases like Java DB "take up a small amount of resources, of memory and things like that. The other category is being embedded in software, where some piece of software needs a database, and they don't want the end user to have to care about it or manage it."

### ALL ABOARD THE SQL EXPRESS

Microsoft's history with embedded databases has been simpler than Java DB's, but only up to a point. SQL Server 2005 Express Edition is easily identified as the Windows Vista-compatible replacement for the Microsoft SQL Server Desktop Engine (MSDE), with multiuser support and a seamless upgrade to more capable versions of SQL Server.

But the companion product for mobile devices changed names so many times in the past couple of years that one might think the company was

trying to keep up with Cloudspace-Derby-Java DB on the product branding front as well. What else can one make of a branding strategy that began with SQL Server CE 2.0—the embedded version of SQL Server 2000—and saw the next version's name morph to SQL Server 2005 Mobile Edition, to SQL Server Everywhere Edition, before settling last year on SQL Server 2005 Compact Edition?

Nevertheless, the old-new name reflects SQL Server Compact's support for desktop computers and tablet PCs, as well as mobile devices. Microsoft pitches SQL Server Compact as a better fit than SQL Server Express for in-process or occasionally connected scenarios, and applications that don't require full text search or XML query processing.

SQL Server 2005 Express Edition comes in three different forms—the core database engine and client components make up the basic package, while full-text search and Web-based reporting services are added to make up the

Express Edition with Advanced Services. The advanced package also includes Management Studio Express, a subset of tools from the SQL Server Management Studio that have been selected for use in a SQL Express environment.

Finally, the Express Edition Toolkit offers the client components, Management Studio Express, and Business Intelligence Developer Studio, a package based on Visual Studio 2005 that includes BI-specific features for developing analysis, integration and reporting projects. As was the case with MSDE, SQL Server Express Edition is not included in the basic Windows install, though minimal restrictions on redistribution apply.

SQL Server Express Edition lacks the workload governor found in MSDE 2000, but otherwise behaves as any other SQL Server installation would—if it were limited to accessing a single CPU and 1GB of system RAM, and had a maximum database size of 4GB. SQL Server Express runs on x86-based computers, and on x64 systems with WoW64 (Windows-on-Windows 64-bit); IA64 systems are not supported. But Coté pointed out that's fine for a lot of what he categorized as "behind-the-firewall" applications, custom-built corporate tools that don't need to scale to several thousands or millions of users.

As one might suspect, SQL Server Express Edition doesn't run if the operating system isn't from Microsoft; Windows "Longhorn" Server, Windows Vista, Windows Server 2003 SP1, Windows XP (except XP Embedded) and Windows 2000 SP4 are all supported with .NET Framework 2.0 and the Microsoft Data Access Components 2.8 SP1, while the IIS 5.0 or later Web server is required to install the reporting features included in the SQL Server Express Edition Toolkit and Express Edition with Advanced Services.

Like most of the company's other front-line products, SQL Server 2005 Express is covered by Microsoft Update, which allows automatic patching and updating without end-user intervention.

Hosted services scenarios are made easier with SQL Server Express' so-called "XCOPY" deployment method, which allows developers to deliver a sin-

continued on page 38 ►



# Microsoft SQL Server 2005 Compact Edition

## Introduction

A new generation of applications is on the horizon for businesses and consumers. This is driven by market changes such as a growing mobile workforce and its need for productivity even when not “connected” and an explosive growth of new devices such as personal digital assistants (PDAs), portable music players, and gaming consoles, creating exciting possibilities for new applications. These new applications place new demands on the data platform on which they are developed.

To meet the needs of this changing application landscape, Microsoft introduces its newest edition of the SQL Server database product line, SQL Server 2005 Compact Edition — a maintenance-free, compact embedded database for single-user client applications for all Windows Platforms, including Tablet PCs, Pocket PCs, Smart Phones and Desktops. Compact Edition is available to deploy and redistribute free of charge.

This white paper outlines the current business and consumer environment and the key factors that influence the need for this new generation of applications. It describes how SQL Server Compact Edition can be used to satisfy the data platform demands of these applications.

## Business Environment and Customer Challenges

Evolving business and consumer needs are placing new demands on the next generation of applications. In the business sphere, more and more employees or information workers are mobile and are seeing the need to run their traditional desktop applications on mobile devices like PDAs and Tablet PCs. In addition, these mobile information workers cannot rely on being connected to the corporate network at all times, but need to have the same rich and complete application experience in the “disconnected” or “occasionally connected” state, as they would have in the “connected” state.

Another growing trend in businesses today is to gain competitive advantage by gaining insights from a plethora of data that is collected every day. This data is being gathered at the “edges” of the enterprise and needs to be aggregated with data from other edge locations at a central site for analysis. Similarly, the mobile workforce that works at the edges of the enterprise needs relevant and current business information from the central data repository.

Meanwhile, information technology (IT) departments that develop and deploy these line-of-business (LOB) applications in their businesses continue to grapple with the challenge of providing robust IT services that are secure and reliable in spite of constantly falling budgets. IT departments continue to look for ways to develop new applications rapidly by leveraging existing skills and tools and to find ways to easily deploy and manage end-user applications, which helps to keep costs down.

For consumers, rich personal applications continue to proliferate and evolve on desktops and home devices, such as gaming consoles and digital video recorders (DVRs). Rich consumer applications also continue to grow rapidly in mobile phones and in the convergent devices arena. Applications such as calendaring that were in the business realm are now also increasingly being required in personal devices.

As application paradigms change, application developers have new requirements for the database platform on which these applications are built. In particular, there is a growing need for local-store databases that are:

- **Embeddable** to provide better application security, performance, and ease of distribution and deployment.
- **Lightweight and compact** to preserve system resources, especially in devices where processor and memory is premium.
- **Componentizable** to allow application vendors to choose essential functionality only, which keeps application size to a minimum.
- **Supported on multiple devices** so the same application code can be used to build applications on multiple devices and platforms.
- **Capable of providing automatic synchronization** to allow end-users to work with most recent data in an offline application experience and to push updates to a central location.
- **Built with advanced security** to protect against threats such as stolen mobile devices.

## The Solution

In light of the changing needs of the new class of applications, Microsoft introduces its newest edition of the SQL Server database product line, SQL Server 2005 Compact

Edition. It is an evolution of the SQL Server Mobile Edition technology. While the latter was used exclusively for mobile devices, its capabilities are now being leveraged to create maintenance-free, compact (less than 2 MB disk footprint) embedded databases for single-user client applications for all Microsoft Windows platforms, including Tablet PCs, Pocket PCs, smart phones, and desktops, to enable the scenarios discussed earlier in the paper.

SQL Server Compact Edition also enables an application to scale up, either via a robust synchronization with other SQL Server Editions, or by moving to a higher edition of SQL Server.

## How SQL Server Compact Edition Can Help

SQL Server Compact Edition addresses the new application development challenges by providing for faster results and increased productivity, better decision making support and a trusted platform.

### Faster Results and Increased Productivity

Developers and administrators can achieve faster results with SQL Server Compact Edition.

### Developers

SQL Server Compact Edition is tightly integrated with Microsoft Visual Studio 2005 as well as the .NET Framework. Developers can readily use their existing knowledge of developing database applications with Visual Studio 2005 to build SQL Server Compact Edition based applications, which enables them to be instantly productive.

### Administrators

As the database is embedded in the application, little or no management is required. SQL Server Compact Edition can be included in the application package and deployed using the Click Once deployment feature of Visual Studio 2005. Alternatively, this lightweight data store can be downloaded quickly. SQL Server Compact Edition can be configured to keep up-to-date with the Microsoft Update services, so administrators will not need to bother with complicated maintenance plans.

### Better Decisions

With SQL Server Compact Edition, together with SQL Server 2005 business intelligence capabilities, you can extend your business insights further across the organization to data sources in distributed and mobile applications. By enabling synchronization to a central database, data in such applications can be captured, analyzed by SQL Server Analysis Services, and reported by SQL Server Reporting Services. The ReportViewer Controls available in Visual Studio 2005 can be used in applications to provide rich reports based on data from SQL Server Compact Edition. .

### Trusted Platform

As a leading database platform, SQL Server 2005 provides an unsurpassed level of trust. The SQL Server product line has been in existence for more than 10 years and has millions of customers.

### Better Over Time

SQL Server scales up from a device to the data center, so as business requirements grow, SQL Server Compact Edition can easily scale up to other editions of SQL Server. Applications of all sizes are supported on the trusted SQL Server platform, including:

- ISV applications that run on mobile devices or a local desktop.
- Occasionally connected applications that need automatic synchronization.
- Small company, departmental, and workgroup scenarios.
- Web-based applications.
- Large enterprise applications, including MRP, financial, and ERP scenarios.

## Conclusion

SQL Server 2005 Compact Edition rises to the challenge of enabling application vendors and IT organizations to create the next wave of applications. Whether it is providing a rich and complete desktop-like application experience to the mobile information workers who are occasionally connected or consumers who are demanding more from their desktop and device applications, SQL Server Compact Edition has a host of features and capabilities that enable it to effectively serve as a local data store for these new applications. Such features include high security, high performance, simple development and deployment, and automatic synchronization.



# Overview

## Product Highlights

Microsoft® SQL Server™ 2005 Compact Edition extends the Microsoft SQL Server 2005 Mobile Edition technology by offering a maintenance free, compact embedded database for single-user client applications for all Windows Platforms including Tablet PCs, Pocket PCs, Smart Phones and desktop computers. In addition, SQL Server Compact Edition is free to deploy and free to redistribute.

## Compact and Capable

SQL Server Compact Edition offers essential relational database functionality in a compact size. With an approximately 5 MB memory footprint and a less than 2 MB disk footprint, SQL Server Compact Edition can run concurrently with other applications, making it effectively invisible to the user of the application. Additionally, SQL Server Compact Edition fits within the resource constraints of today's mobile devices.

## Great Performance

The Database Engine in SQL Server Compact Edition uses indexes to balance its optimizer for speed and efficiency, thereby improving query performance. The query processor takes advantage of statistics support in the storage engine to create significantly better cost-based query plans. The storage engine architecture is written to optimize for a mobile architecture. Data reliability is enhanced by using true atomicity, consistency, isolation, and durability (ACID) support when clients or devices experience power loss or suffer from connectivity disruptions.

## Rich Features

Developers who are familiar with SQL Server will appreciate the following feature set:

- Full referential integrity with cascading deletes and updates
- Multiple connections for foreground and background operations
- Single data file with password protection and 128-bit file level encryption
- Transaction support to commit and roll back grouped changes
- A wide range of data-types
- Supports databases up to 4 GB
- Offers SET functions (aggregates), INNER and OUTER JOIN, subselect, and GROUP BY and HAVING clauses
- Scrollable and updatable cursors to provide fast and easy data access

## Familiar Database for Rapid Application Development

By using the SQL syntax and ADO.NET programming model common with other SQL Server 2005 editions, and by using SQL Server 2005 Management Studio, SQL Server Compact Edition lets developers and administrators apply their existing skills and be immediately productive. The same application code can also be used to build applications for multiple devices (including Pocket PCs, Tablet PCs, and desktop computers) and multiple operating system platforms (including Windows XP, Windows 2000, Windows Mobile, and Windows CE). This can drastically reduce development effort and costs.

Application developers and ISVs can embed SQL Server Compact Edition in their applications by using Microsoft Visual Studio® 2005 and the .NET Framework (or the .NET Compact Framework for device platforms). When the application is deployed to the device, SQL Server Compact Edition is installed automatically.

Administrators can manage a SQL Server Compact Edition database on the client or device with SQL Server Management Studio, the primary management tool for SQL Server 2005. This integrated tool provides the same management and querying experience across all editions of SQL Server 2005.

## Flexible Data Access

SQL Server Compact Edition allows data to be updated in the client application and on the server simultaneously. Even if the user is not currently connected to the network, the SQL Server Compact Edition-based application can be used continually, storing and

managing the data within the local database. The data can later be synchronized when the connection to the host instance of SQL Server is reestablished.

SQL Server Compact Edition supports two options for data synchronization: merge replication and Remote Data Access (RDA).

## Merge Replication

Merge replication in SQL Server Compact Edition is ideally suited to remote clients and devices because it enables autonomous data updates in the client application and on the server. The data can later be synchronized when a connection is reestablished. Several usage scenarios for merge replication are supported, including read-only replication; data capture and upload; and replicate, update, and synchronize.

## Remote Data Access (RDA)

RDA provides a powerful yet simple way for a Windows® or Windows Mobile®-based application to synchronize data between a remote SQL Server database and SQL Server Compact Edition. RDA is especially useful when applications have well partitioned data, do not need the full functionality of merge replication, and do not have administrative rights to configure SQL Server publications.

Applications can use RDA in two ways. The application can submit an SQL statement to the SQL Server database for execution, or the application can submit an SQL query that returns a rowset to a table within SQL Server Compact Edition. All changes made to the table will be tracked. At the request of the application, the added, deleted, and updated rows will be sent back to the server where they are applied. RDA uses the authentication, authorization, and encryption services of Internet Information Services (IIS), and supports anonymous and basic authentication, and Secure Sockets Layer (SSL) encryption.

## Desktop Deployment Options

Administrators can roll out SQL Server Compact Edition with a standard Microsoft Installer package (MSI) with minimal effect on their users. Using an MSI, SQL Server Compact Edition is installed in a standard location, allowing servicing by Microsoft Update, Windows Server Update Services, or Microsoft Systems Management Server.

Developers and ISVs can use Visual Studio 2005 to easily verify and deploy SQL Server Compact Edition when using the ClickOnce deployment option. Alternatively, SQL Server Compact Edition can be deployed by copying the engine files (several DLLs totaling less than 2 MB) to the application directory. The former option helps support scenarios where the user does not have administrative rights on the computer.

## Strong Data Security

SQL Server Compact Edition data files can be secured by using a password and RSA 128-bit data file encryption. When using RDA or merge replication, SQL Server Compact Edition can be configured with 128-bit encryption during data synchronization (over the wire).

Security in SQL Server Compact Edition is enhanced because it runs in the same process as the application, instead of running as a separate Windows service.

## Build on a platform that can grow with your business<sup>1</sup>

As the requirements, scale, and reach of applications grow, SQL Server Compact Edition enables applications to easily scale up to other editions of SQL Server, including Workgroup, Standard, and Enterprise Editions.

## Best of all, it's FREE

SQL Server Compact Edition is free to download, develop, and deploy applications.<sup>2</sup> SQL Server Compact Edition is also free for third parties to redistribute.<sup>3</sup>

For more information,  
see <http://www.microsoft.com/sql/editions/compact>

**Microsoft®**

1 SQL Server Compact Edition is not currently optimized to serve as a database for Web sites. As a result, connections from ASP.NET applications are blocked by default in SQL Server Compact Edition.  
2 A SQL Server Client Access License (CAL) is required for any connection to SQL Server, including a connection from SQL Server Compact Edition.  
3 A simple redistribution agreement must be signed online.  
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# To .NET or Not, That's the Question

◀ continued from page 35

gle executable and companion database file to end users without requiring further configuration.

## DERBY RUNNING

The open source Java DB has an interesting history behind it, with origins going back about a decade to the Cloudscape JBMS, a SQL-92-based object-relational database system. JBMS occupied only a 1.5MB memory footprint while it let users store serialized Java classes, and featured SQL-J, an extension to SQL that allowed the use of Java classes in SQL statements.

Although seen as a groundbreaking departure in its day, the database languished for several years, as Informix acquired the Cloudscape assets in 1999, and Informix was in its turn picked up by IBM in 2001. In May 2004, having neglected it the preceding three years to promote what was now simply known as "Cloudscape" to new customers, IBM donated the database to the Apache Foundation as its first contribution of a commercial product's source code. IBM continues to offer the technology under the Cloudscape name, running on any standard JVM and operating system combination; the latter group includes AIX, Linux,

OS/400, Solaris, Windows and z/OS.

Now known as Apache Derby, the database continued to evolve; the pace picked up as Sun threw its weight behind the project, allowing it to graduate from incubator status in 2005, within a year of its adoption as a sponsored project. By the end of 2006, Sun had implemented Derby—under the name of Java DB—as the data store for its Portal Server and Service Registry, and as the developer database for its Java System Application Server.

Java DB is still a lightweight database platform, having grown to an expected footprint of 2MB; it can be used as an embedded database running inside the same Java Virtual Machine as the application, or in the classic client/server mode with its networked JDBC driver, under Unix and Windows.

In either use case, Sun claims that Java DB requires little if any administration, as IBM does for Cloudscape. The Derby project offers ij, an interactive SQL scripting tool, for simple backup and administration chores. Third-party tools such as Squirrel can also be used with Derby-derived platforms such as Cloudscape and Java DB. But out of the box, Coté noted, "there's several more GUI-driven tools that come with [SQL Server] Express than you get with Der-

by, which doesn't really have the reports" that SQL Server Express has.

Java DB is distributed with the Java SE 6 software development kit, but is not included in the JRE runtime environment for end-user machines. Thanks to its small footprint, Java DB is a good fit for PDA/smartphone-class Java ME CDC (Connected Device Configuration) applications that require advanced database features.

Developers can expect Java DB to strongly adhere to the SQL-92 behavior model; SQL-99 and SQL-2003 features categorized as core or mandatory are largely supported as well. Substantial exceptions to this include the lack of a LIMIT clause or ROWNUM function for pagination queries, and the inability to use updatable queries with subqueries. The current release (10.2.2.0, as of March 1) of Java DB includes compiled JDBC 4.0 drivers. These had previously been included as source code in both Derby and Java DB.

In practice, Java DB does not limit the size of a database; hardware, and Java's 64-bit interfaces, will of course always pose constraints. Object sizes are limited to 2GB, either as BLOBs (binary large objects) or CLOBs (character large objects).

Java DB itself lacks the native ability to run in a cluster; the open source Sequoia project—a continuation of the Clustered JDBC effort—supplies a layer of clustering middleware that achieves the same result.

## WHEN WORLDS COLLIDE

Coté is fascinated by how people are using embedded databases. "There are a lot of people playing around with using Derby as an in-browser database, so, there's [been] a lot of demos where people have had the idea of 'It'd be great if we had local content stored for Web applications.'" He said people have done this "through a Java applet or a Flash bridge; they're running a little applet that has the Java database in there.... I suspect that most people just use [SQL Server] Express for having a free database for doing things, or if they have applications that need databases, [but] not so much Web applications, or experimental things like that."

But, Coté stressed, these populations tended to be self-selecting anyway, and it's almost necessary for both camps to have some kind of free version of their databases available. "You have to have those low barriers to entry, so people can try something out without having to spend money." ■

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# Pervasive Living Up to Its Name at 25

BY P.J. CONNOLLY

Before there was a SQL Server Express Edition, before there was even a Java, there was Btrieve. 2007 marks the 25th birthday of Btrieve, as well as the birth of what is now Pervasive Software. What began as a husband-and-wife team writing and marketing a simple record manager—granted, they were a couple whose experience came in large part from their engineering jobs at Texas Instruments—is today a publicly traded company with 2005 revenues of US\$45 million, doing business in more than 150 countries.

## TO NOVELL...AND BACK

When Douglas and Nancy Woodward launched Btrieve in 1982, they set up the SoftCraft company, which they sold to Novell in 1987 after modest success on their own. Although Btrieve never came close to the widespread use of the star of those days, Ashton-Tate's dBase, it had developed a sound reputation and a developer community of more than 5,000, according to a 1995 book by Jim Kyle.

As Gilbert Van Cutsem, Pervasive's general manager for database products, put it, "Novell always wanted an applications platform...and a database on NetWare to attract applications," and the company would go on to use Btrieve as a core component of its software story, first in NetWare 2 as a Value-Added Process, migrating it to NetWare 3 as a NetWare Loadable Module. Btrieve served the role for Novell that Jet would for Microsoft, as the ubiquitous embeddable database for applications and services.

But during its mid-1990s firesale, Novell sold Btrieve back to the Woodwards, now incorporated as Btrieve Technologies. Although the company would go public and rename itself in 1997 as Pervasive Software, and its flagship product as first Pervasive.SQL and later PSQL, Btrieve remains a core technology for Pervasive.

At various points, Btrieve/PSQL has run on DOS, Linux, NetWare, OS/2 and Windows; PSQL has been fully relational for a decade, and the current PSQL 9's dual-access features allow it to read data from the early 1990s' Btrieve 5.15. PSQL

maintains full file support for Btrieve 6.15, and supports the Btrieve API. In short, applications and data from more than a decade ago are still usable.

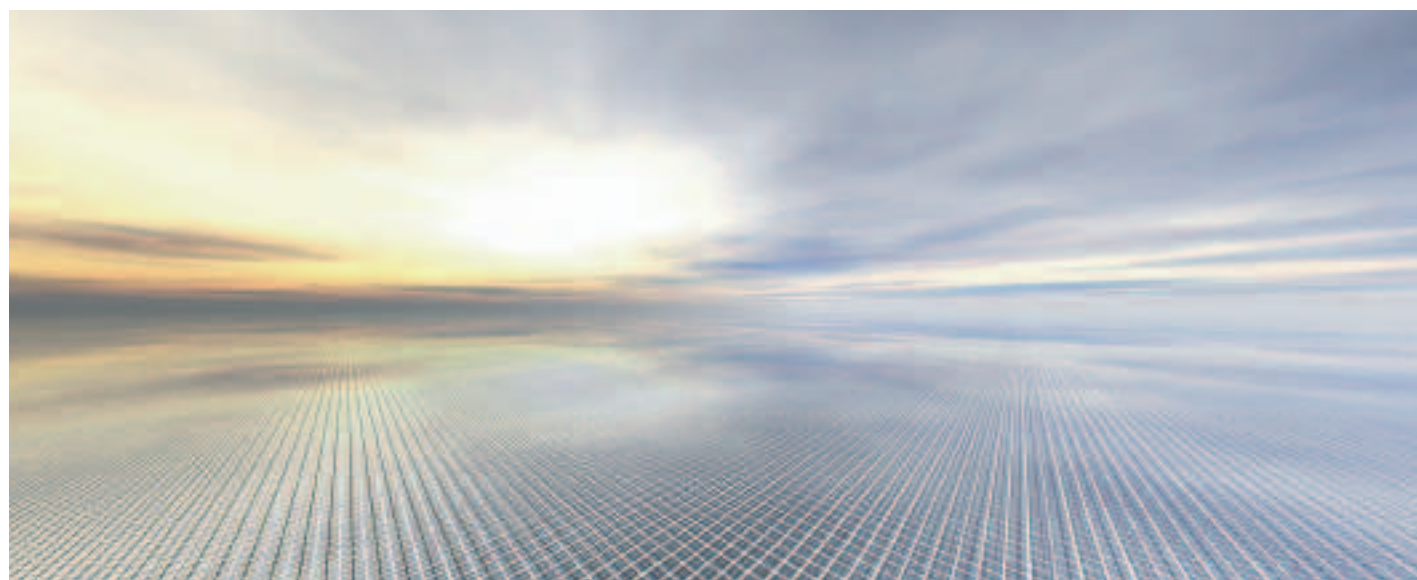
The company now supplies a

range of integration products as well as a line of PSQL spinoffs covering backup, data security and replication. Business integration, data profiling and integration, Oracle Application Server

adapters, and formatted message storage are all areas where Pervasive has shown its presence.

To Van Cutsem and his customers, Pervasive's rear-view focus isn't about nostalgia. "Our

focus has always been on backward compatibility. We have always been a product for ISVs" building shrink-wrapped applications for small and medium businesses, he noted. ■



## A New Era for Data Replication

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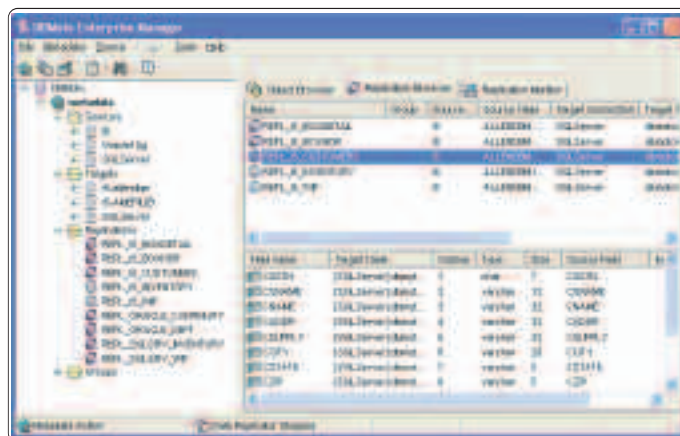


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## FROM THE EDITORS

## Big IDEs Aren't Everything

For years now, the buzz in the analyst and enterprise development world has circled around giant, extensible integrated environments, such as Visual Studio, Eclipse and NetBeans, that would control all and be used for every task, from design to building to testing to deployment.

At first glance, it would appear that IDEs have, indeed, taken over the world. But there's plenty of room for other tools. Not everyone uses an IDE; many users prefer discrete tools. Even when IDEs are used, there's a tremendous amount of innovation that takes place elsewhere. Larry O'Brien's article on page 14, comparing two updated programming environments, shows that diversity of languages and situations has spurred new ideas outside the seemingly commoditized "Big IDE" universe.

Sure, open source has tremendous power to bring down prices and satisfy demand: Observe the popularity of Eclipse and NetBeans. Certainly, there is room for a massive IDE constructed by a large team of dedicated developers marching to a single drumbeat: Microsoft's Visual Studio is still tops with many developers.

However, one size doesn't suit all. For many tasks, and for many development teams, sometimes the big boys aren't all they're cracked up to be. With languages such as Ruby, PHP and JavaScript commanding so much attention these days, developers often find that a big IDE is simply too much overhead for building Web applications or simple connectors. These are the sorts of people who still demand emacs or vi for their work, and they're the target audience for the half-step IDE—that is, a development environment that's only a half-step up from a plain old editor.

SlickEdit, Komodo and the new RAD tools from CodeGear all fill this need, and bring much-loved features like syntax highlighting, automated comment handling and debugging tools into the otherwise barren interfaces that these quick and dirty programmers love so much.

Certainly, the giant IDEs will always be the flagships of professional software development, but as long as there are programmers who become infuriated with too many controls and helpful hints, there will be a space for smaller, more targeted tools and environments.

## The Spirit of Grace Hopper

The decision by the Association for Computing Machinery to present its most distinguished honor, the A.M. Turing Award, to Frances E. Allen was an extraordinary event: For the first time, the award went to a woman.

Some would argue that "it's about time." And while software development has historically been a boys' club, the recognition of Fran Allen may be a sign that things are changing.

It's hard to deny that, historically, software development and computer science were boys' clubs. Perhaps the bias wasn't overt, but if you look back at any list of early innovators in our discipline, you see men's names, with women like Grace Hopper standing out as very rare exceptions. The academic, social and professional environment of the 1940s, 1950s and 1960s—when much of the most groundbreaking work of early software development was done—was very much a man's world. Prizes like the Turing Award typically go toward work done many years ago, or for a distinguished career reaching back decades.

Today it's different. Yes, there are still perceived and real biases against women in many technical professions, including software development. Yes, there may be discrimination, both overt and inadvertent. But as you can see when you attend any software development conference or tour a programming department, the historic gender disparity is shrinking.

For that, and for many more things, we can thank Fran Allen. Not only is she a first-rate computer scientist, but she also pioneered many programs to bring more women into every aspect of our profession. For all her many accomplishments, we owe her our thanks. And as for the A.M. Turing Award: Yes, it's about time. ■

## The Smart Client Top Five

Are you currently at the design-phase crossroads and deciding between smart client or thin client Web architecture? If so, my advice to you is to go with smart client, hands down.

Most likely you've heard the term smart client and wondered what exactly it means. Some people think it's yet another Microsoft technology to learn. Still others mistakenly think that smart client is just another name for Windows Forms. Although it encompasses development with Windows Forms, smart client is a whole lot more. It's got a lot of advantages, but the best thing smart client architecture offers is a superior user experience.

To give smart client architecture some context, let's look at the recent history and evolution of Windows application development. With the advent and evolution of Windows development languages, there were many software applications developed that were then referred to as "fat clients" but are now more fondly referred to as "rich clients."

Initially these applications were constructed with the typical client/server architecture where all user interface components reside on the client and processing takes place on the server. Needless to say, a single database and the inability to distribute application logic created an inherent lack of scalability in this architecture. Subsequent technologies such as DCOM and application servers such as COM+ provided scalability by enabling the distribution of code to multiple machines. These applications became known as distributed or *n*-tier applications.

The primary advantages of rich client applications were robust development and debugging, improved user interface and the ability to use client-side resources. The disadvantage of rich client applications is that they're difficult to deploy and maintain. To deploy these applications automatically, developers had to write additional utilities to handle downloading files and component registration. Because these applications relied on registered DLLs, maintenance was also a challenge.

Then along came the Web browser, and it was quickly hailed as the great equalizer that would enable software to run on all machines. The primary advantage of the browser-based application is that it's relatively easy to install and update. Thin clients leave the client computer unaffected, and anyone with a browser can access it.

Initially there were few tools available to develop Web applications other than HTML. Technologies such as ASP, style sheets and XML emerged to allow

easier development of more robust thin clients. These technologies were improvements, but the user interface of Web-based applications could never compare in functionality and robustness to that of rich clients. These tools also never offered a cohesive and robust development environment, making the development of Web applications more time-consuming.

The .NET Framework and Visual Studio have a group of features that let developers create Windows Forms applications that have all the advantages of *n*-tier applications but are easier to deploy. This set of technologies is called the smart client application model. This model not only means more user-friendly applications for users, but also a feature-rich development environment with full debugging support.

### SMART CLIENT FEATURES

Smart client is a term coined by Microsoft, but doesn't have to be specific to Microsoft. Smart client isn't a single technology but refers to a collection of technologies and application features that not surprisingly go hand-in-hand with Microsoft's development tools (although you can use other development tools to create smart clients). The best way to define smart client is to describe the characteristics of a smart client application. Those characteristics are:

- **Uses local resources.** Unlike Web applications, smart clients can access client-side hardware. Therefore complex calculations and other actions that require a lot of CPU and memory usage can be performed on the client. Local resources not only include hard drive and memory, but also special hardware like scanners or bar code readers.
- **Is network-enabled.** Although smart clients have offline capability, they are typically connected applications and designed to consume network resources. Those network resources could be anything from data from a database or file share to Web services.
- **Has offline capability.** Smart client applications provide the ability for users to continue working when disconnected. This is typically done through data caching and managing connections when the user is online so that the user can continue working normally regardless of whether the application is connected or not.
- **Has flexible deployment.** Developers now have a number of methods for handling the deployment and updating of smart clients, the most compelling of which is no-touch deployment. With no-touch deployment, applications are deployed by copying files to a central

Dianne Siebold





server. Users then access the server through a URL and the updated files are downloaded to the client. Bear in mind that you must handle deploying the .NET Framework to the client unless the client is running Windows Vista (which includes the .NET Framework 3.0).

These are the overall characteristics of smart clients. Some applications may use all or only a few of these features, and the manner in which these features are implemented varies depending on the available platform, the application requirements and the developer's chosen architecture.

#### WHY SMART CLIENT?

Here are five reasons to go with smart client:

**1. Superior user experience.** Smart clients offer a much better user experience, and the development tools make it easier for developers to provide a rich interface. The sheer number and variety of controls in Visual Studio enable you to create intuitive interfaces with objects like tabs, trees and grids. UI features like drag-and-drop and dynamically linked list boxes can easily be implemented without having to refresh a page. UI-dependent interfaces such as those in data entry applications can be designed with keyboard shortcuts and other navigational elements that improve usability.

Not all smart clients have great interfaces, but I can honestly say I've never used a Web application whose interface matches that of a smart client application. Thin clients force you to design applications that work around the limitations of the platform. Web applications are suitable for some applications, but for interface-intensive applications, smart clients offer much more functionality.

**2. Improved deployment.** Applications that update themselves automatically, such as Norton Antivirus and

Adobe Acrobat, are becoming commonplace. Web applications have always had a simple deployment model: Just update the Web server and all clients see the updates. Now smart clients not only have streamlined deployment but updating those applications is easier than ever.

There are a number of methods for deploying smart clients: no-touch deployment, ClickOnce, xcopying files, Windows Installer and running the application from a file share. These different deployment methods provide developers a choice based on the application deployment and security requirements.

**3. Better development.** With smart clients, both the tools and the architecture are far more robust. Using Visual Studio with Windows Forms means a full-featured IDE with full debugging capability. The smart client architecture means that your application doesn't need to be concerned with managing state or callbacks to the server within your application. Resources and data are always available to the client.

**4. Offline support.** With increasing numbers of remote users and users running applications on PDAs and phones, the ability to work offline is becoming more of a requirement. Improved data caching means that users can continue to work even if they're offline or in a situation where they're only occasionally connected to a network. Data can be synchronized through the database, or you can use something like MSMQ to post changes to a queue and then those changes propagate upon connection.

Implementing offline capability isn't seamless. It requires developers to write code to detect when users are connected and handle data synchronization. Smart clients can support this model, whereas Web applications require a constant network connection.

**5. Use of client resources.** The ability for smart clients to use client resources means that developers can create truly functional applications for their users. Because data can be cached on the client, operations that might take a long time, such as a complex calculation or a report, can be optimized. Smart clients are designed to utilize client hardware and are ideal for applications that use hardware like scanners or label printers.

As a developer, I've found that smart client provides an excellent model for creating software that delivers what my users need. That said, there are scenarios when it's more appropriate to implement a standard browser-based application. For example, the Web is ideal for software that displays text or for simple applications.

If you're currently implementing a Windows Forms application, I suggest integrating as many smart client features as you can so that your software can meet future needs. For example, users may not have an immediate need for offline capability. But as your user base expands, this could very likely become a requirement in the future. If you're at the architecture crossroads, smart client might just be the road to take. ■

*Dianne Siebold is a programming writer at Microsoft and owner of TechMedia Press. She specializes in documenting APIs, SDKs and writing white papers.*

#### CORRECTIONS

OOXML, the Microsoft-driven proposed document standard, stands for Office Open XML. It was incorrectly defined in the Feb. 15 issue.

Work on JSR 73, the Data Mining API specification, was completed in 2004. The year was incorrect in a story that ran in the Feb. 1 issue.

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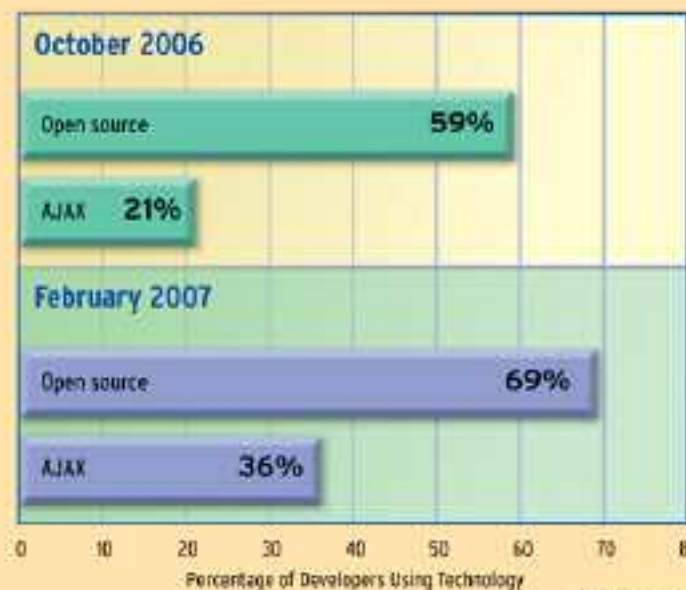


## AJAX Use Climbs in New Markets

## DATA WATCH

Developers in Brazil, China, Eastern Europe, India and Russia are making substantial use of AJAX in Web development, according to figures released in February by Evans Data. In the 2007 Emerging Markets Development Survey, more than 400 developers reported on topics including AJAX, Eclipse, open source use, security and Windows Vista adoption.

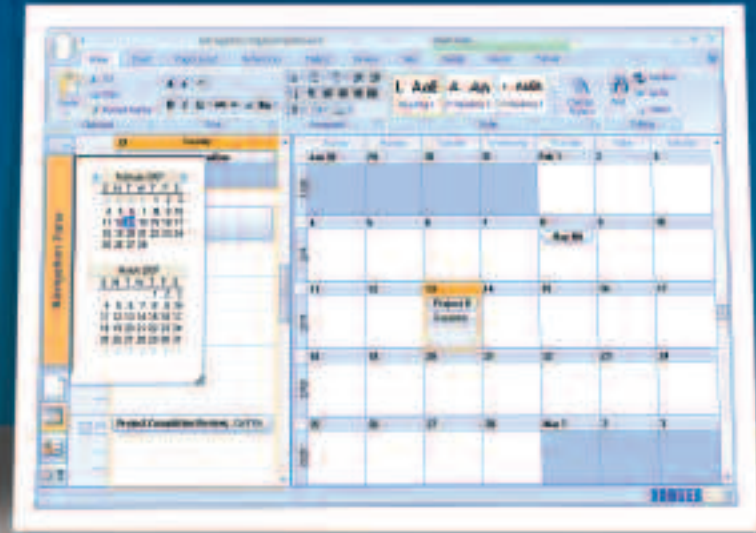
In the past six months, the number of developers using AJAX grew by almost three-quarters, from 21 percent to 36 percent, according to the Evans figures. Open source use continued to climb from last summer as well, but less dramatically: The figure of 59 percent of developers from last summer grew to 69 percent by this year.





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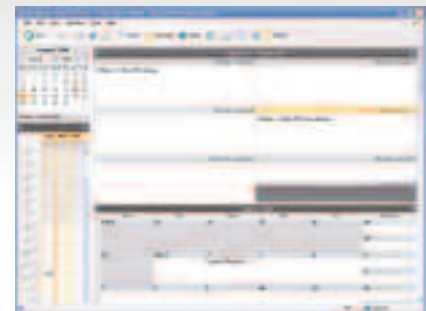
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# Going Over the Software Product Line

Many teams are in the business of creating the same, or virtually the same, application again and again. Typically, the core logic stays the same, but there's often the need to customize the interface and often customer-specific business rules. As with all teams, companies struggle with how to keep down their development and maintenance costs. For years, object orientation was seen as the best route, but recently there's been increased interest in what are called "software product lines."

Software product lines differ from previous approaches by embracing the ongoing development and maintenance of multiple codebases. These codebases are branched off from a main trunk of "core assets." The Software Engineering Institute of Carnegie Mellon University puts this as "use of a common asset base in production of a related set of products" ([www.sei.cmu.edu/productlines/about\\_pl.html](http://www.sei.cmu.edu/productlines/about_pl.html)). Where object-oriented and other traditional approaches have emphasized the development of abstractions that can incorporate the variations characterizing individual projects (just as an object-oriented library might have a "Window" class serving as the base for forms), software product lines abandon the search for "small grained" abstractions and seek strategic assets at the business level that

can apply to many customers. These assets are rarely software components per se, but rather documents, frameworks, code generators and so forth.

Software product lines are most in vogue in larger businesses, government agencies and other bureaucratic innovations. The literature on software product lines involves loads of buzzwords and 24-bit graphics (referring not to color depth, but to the amount of information conveyed), but once you put aside the "core competencies" and arrows chasing their way around triangle edges, you can actually find some good ideas.

In "Extreme Programming Explained," Kent Beck made the epochal proposition that the cost of changing a defect did not necessarily have to increase over time. With the changes wrought by the Internet in communication and deployment and the right practices, the cost of changes could plateau rapidly and stay essentially constant. It's important to remember that the business case of agile practices is based on this proposition—that it "feels good" to developers is a side effect.

Software product lines rely on Beck's

proposition. The generation of a software product bears striking similarities to the "convention over configuration" philosophy of Ruby on Rails. Where Rails applies this to the task of building a certain kind of Web application, a software product line applies it broadly to the creation of software artifacts. "Convention over configuration" only succeeds when the cost of overriding the convention is low. In contrast, strategies based on abstraction seek to discover invariants that don't require modification or, if change is discovered, the cost is borne only once.

The problem is that Beck's curve of flat defect-correction costs has not been broadly achieved. It is undoubtedly true that defect-correction has been made cheaper in the construction phase with the widespread adoption of unit-testing, and in post-deployment by the benefits of the Web as both a back-end host and a deployment medium.

However, low-cost late-phase corrections are built on disciplined refactoring—code quality must stay high and changes must be made, tested and integrated efficiently. Refactoring such as this is difficult to do across a product line con-

sisting of trunks and branches and simultaneous deployments; the only place where refactoring approaches the ease of "reuse by cut-and-paste" is in the better environments for object-oriented languages. For other development artifacts, such as word processing documents, design documents and requirements lists, evolution is difficult enough within a single app—moving invariants into the "core assets" and variations out across multiple deployed systems is a monumental task. That is, changes are expensive.

Software product lines are a good idea. They accurately reflect business models, the metaphor fits common aspects of development, and anything that advocates running systems over theoretical perfection is OK in my book. However, the real-world development of software product lines is hampered by the real-world limitations of maintaining a stable center as the product-line offerings spin off in a widening gyre. Discovering abstractions and refactoring applications so that changes need to be made in just one place is the only way to control the cost of defect correction. Object orientation, despite no longer being the shiny new toy, is still the formation foundation we know for discussing, structuring and developing such assets. ■

*Larry O'Brien is a technology consultant, analyst and writer. Read his blog at [www.knowing.net](http://www.knowing.net).*

## Windows & .NET Watch



## Struggling with SOA enablement and governance? You're not alone.



Service Oriented Architecture (SOA) is clearly the focus of IT buzz today, but it is really more of an evolution of ideas and practices that have been around for a while. In fact, Noblestar and IBM® Rational® have been helping companies adopt SOA for a number of years. Throughout these years, the challenges with SOA enablement and governance have remained the same:

- ▶ How do you gather and manage requirements for reusable software services?
- ▶ How do you ensure that these services align with your business strategy?
- ▶ As you build a portfolio of services, how do you govern usage of and changes to your service portfolio?

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# Characterization: Beyond Pure Unit Testing

If asked to explain, practitioners of unit testing generally recommend the practice because it enables them to be sure their code does what they expect it to. It is a mechanism that gives some reasonable belief that the base being built is solid—that is, it works correctly given a variety of inputs and under varying conditions.

For me—a strong believer in unit testing—the practice has other advantages that are less discussed but certainly acknowledged by developers.

One is that I can reasonably extrapolate when I will be done with a project. The aspect that historically made guessing completion milestones so difficult was that the coding cycle generally opened onto an extensive debugging cycle whose extent and duration were unknown. This was so because developers preferred doing the minimum amount of testing necessary to move forward with feature creation. So, when the package was pushed to QA, simple tests with out-of-range values frequently revealed design flaws and weaknesses that required rewriting large sections of code. Unit testing removes this problem. If I write good unit tests, this kind of refactoring almost completely disappears. So, the estimation I am left with is guessing how long it will take to write the original code and the accompanying

unit tests. In general terms, I can estimate this fairly well. And so unit testing gives me the key ability to map out work in a sensible way and proceed according to a known, reasonable schedule.

Another benefit of unit testing is my central theme. By writing lots of unit tests, I create hundreds, even thousands, of seismographs that are embedded in my code. If new code disturbs some functionality or undoes an invariant of my previous code, one of those seismographs will generate a fault message in the form of a failing unit test. This is invariably a valuable insight (and one, I might add, that is possible only if *all* unit tests are run regularly.)

The concept of using unit tests as seismographs that monitor existing code has been given new life recently in work by Michael Feathers that first appeared in his excellent book “Working Effectively with Legacy Code” (Addison-Wesley, 2004). In it, Feathers discusses “characterization tests.” These are unit tests written explicitly for the purpose of capturing the current functionality of code. The tests are not intended to prove the quality of code, but merely to record how it

operates. (Remember the book’s theme is dealing with legacy code, which Feathers defines as existing code with no unit tests.) The benefit is that if you’re refactoring legacy code, you can tell if you’ve disrupted it when any of these characterization tests fail. When you think about it, this might be about the only way of recording functionality in a faithful and actionable way. Clearly, deriving UML diagrams or flowcharts of the code is nearly pointless in this regard, because those artifacts cannot automate the process of telling you what you’ve unhinged and what its effects are.

However, characterization tests do have one important practical drawback: If you are actively changing the legacy code, every change is going to require you to fix or rewrite the characterization tests—in addition to the new unit tests you’re writing for your modifications. That’s a lot of tests. And at some point, especially after a big change, even developers who are sold on characterization tests give up the effort and slip back into the old ways—hoping to get by on the new unit tests, some ill-defined functional testing and their wits.

Comes now an interesting solution from Agitar. A new project, currently in beta testing (but visible at [www.junitfactory.com](http://www.junitfactory.com)), automates generation of characterization tests. An Eclipse plug-in sends your Java code to Agitar’s servers, where dozens of tests per class are generated and shipped back to your desktop.

These tests are not intended to find errors in your code. On the contrary, they are all designed to pass. Now then, when you make a change and a few tests fail, you do *not* fix them. You look at them and make sure you understand what failed and why. If you’re OK with the failures (that is, changes were noted where you expected), you simply have [junitfactory.com](http://junitfactory.com) regenerate the characterization tests. The new tests now reflect your modified version. You can always save the original tests if you want to maintain the original snapshot. I recommend you do this so that you can document exactly what functionally changed.

What makes characterization testing really work is the automatic generation. On greenfield projects, if the generated tests pick up a change that escaped my hand-written unit tests, I cut and paste the test into my suite of unit tests. And suddenly my code and projects are of even better quality. Nifty, huh? ■


Andrew Binstock is the principal analyst at Pacific Data Works. Read his blog at [binstock.blogspot.com](http://binstock.blogspot.com).

## Integration Watch



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# Development Goes Vertical

**M**arc Benioff took to a makeshift stage during a luncheon at New York City's Pierre Hotel in late February, touting the numbers his Salesforce.com organization has been able to attain in its eight years of existence.

The Salesforce CEO cited US\$497 million in fiscal year 2007 revenue for the first, and to my knowledge, only pure-play software-as-a-service company around. He mentioned 29,800 paying corporate customers, and 646,000 paying subscribers.

Benioff further noted that IDC believes the CRM market will grow 31 percent in the period from 2004 to 2010, and that Gartner research shows that 25 percent of all software will be delivered on-demand.

He rattled off Salesforce CRM applications, the AppExchange, the IdeaExchange, AppStore and the Apex platform as proof that the company has fulfilled its original vision—creating the infrastructure necessary to deliver, expand and create new on-demand applications that help ISVs and the businesses they serve become more successful.

Salesforce has done this so well, Benioff noted wryly, that the company has purchased the former headquarters of CRM rival Siebel Systems in San Mateo, Calif., and turned it into an incubator for ISVs that wish to write applications based on the Salesforce.com platform. Siebel, it should be noted, was bought by Oracle.

But Benioff and key members of his staff didn't trek to New York merely to review where the company has come from. The event clearly was to show where the company is going. Like its financials, Salesforce.com is going vertical.

"Customers want innovation, not infrastructure," Benioff said. "They don't see differentiation with an app server, or a database, or an operating sys-

tem." He described Apex as the world's first on-demand operating system, with a multitenant database, development system and development language. He added that his team has written the infrastructure, application, operations and business services required to develop, run, maintain, secure, share and make available applications of all sorts.

## Industry Watch



David Rubinstein

The applications, he added, are packaged, reusable components that allowed Salesforce to look upward. "Now that the modularity of application development is in place, we can create a SKU for Wealth Management, and other [vertical] SKUs."

The Wealth Management application targets the financial services sector—hence, the trip to the financial capital of the world. Dow Jones is buying in. So is Thomson Financial. Each displayed how its information can be used by financial advisers to build stronger customer relationships in a mashup-like interface that provides news feeds and stock quotes along with the customer profile, so the advisers can home in on preferences and breaking events.

Cisco was on hand, showing how its service-oriented network architecture helps move audio, video and data packets through the pipes to keep the interface current. It also has developed VoIP technology that allows phone calls and conferencing right from the desktop.

Wendy Siegelman, director of global solutions for Dow Jones, noted how the financial services field—like so many others—is being impacted by the Internet. Many stock traders can find their own information and trade more cheaply on sites such as eTrade and a myriad of day-trading portals, so the old-guard financial services companies are shifting the focus from

transactions to relationships.

Alan Scott, the chief marketing officer of the Dow Jones Enterprise Media Group, said "now it's about monetizing the brokerage, and developing lasting relationships." The company's Wealth Manager software looks at a large number of news sources with unlimited variables and flags the adviser when news specific to a customer or group of customers occurs. "We're now providing a quantifiable link between frequent and meaningful adviser/client communications and client loyalty, and growing the assets under management."

George Hu, Salesforce's chief marketing officer for the Wealth Management edition, pointed out that there are only 245,000 so-called Bloomberg terminals installed—those are the machines that provide real-time data into all the financial markets, commodities, securities and currencies—while there are 3.8 million financial advisers without access to that data.

Matt Burkley, president of Thomson Financial customer enterprise solutions, said that in the past two decades, Thomson has divested itself of more than US\$10 billion of its original revenue base—print products—and reinvested in electronic information solutions, which now account for 98 percent of the company's deliverables.

Cisco's Jerry Hayden said financial services are going through three major phases: efficiency, letting customers interact when they want with the device they choose; effectiveness, such as having a customer fill out a form online, or see a tutorial, without having to come down to a branch office; and combining video, voice and data, which can ensure compliance by noticing that a disclosure form isn't sent or a mandatory video hasn't been watched.

"Users," Hayden said, "have determined in many cases that human contact is not needed or desired." ■

*David Rubinstein is editor-in-chief of SD Times*

## BUSINESS BRIEFS

The merger last month of two application outsourcing firms with a strong presence in Eastern Europe extends their access to talent and the small and midsized business markets across Europe and North America, the companies said in a news release. Financial terms were not disclosed. **Exigen Services**, with operations in Central and Eastern Europe, brings expertise in technology-driven outsourcing, and **StarSoft Development Labs** has a pool of skilled developers across Russia and Ukraine. "We have created one of the largest and most capable firms in Europe by combining two world-class organizations, which share corporate values, work ethics and strategic objectives," said Nick Puntikov, CEO of StarSoft. Upon completion of the merger, Alec Miloslavsky will continue to serve as Exigen's CEO and chairman of the board. Puntikov will serve as Exigen's president, Eastern Europe, with responsibility for strategic development in that region.

**EARNINGS:** Application life-cycle management software provider **MKS** reported a decline in total revenue and income for the third fiscal quarter ended Jan. 31. For the quarter, MKS took in US\$11.6 million, down from the \$13.4 million reported for the prior year's quarter. Meanwhile, net income fell from \$1.6 million in the same quarter last year to a net loss of \$1.2 million. The company attributed part of the decline in licensing revenues to a move into larger enterprise accounts with longer sales cycles. "We have made major investments in large account sales, packaged application integrations and Asian expansion over the past few quarters and expect to see much stronger license revenue as a result in the near future," said Philip Deck, CEO of MKS. The company anticipates revenue for 2007 will be in the range of \$50 million to \$52 million. ■

## EVENTS CALENDAR

<b>BrainShare</b> Salt Lake City NOVELL www.novell.com/brainshare	March 18-23
<b>SD West</b> Santa Clara CMP MEDIA www.sdexpo.com	March 19-23
<b>VSLive</b> San Francisco FAWCETTE TECHNICAL PUBLICATIONS www.ftponline.com/conferences/vslive/2007/sf	March 25-29
<b>Emerging Technology Conference</b> San Diego O'REILLY MEDIA conferences.oreillynet.com/et2007	March 26-29
<b>Embedded Systems Conference</b> San Jose CMP MEDIA www.embedded.com/esc/sv	April 1-5
<b>Web 2.0 Expo</b> San Francisco O'REILLY MEDIA www.web2expo.com	April 15-18
<b>Gelato ICE Itanium Conference &amp; Expo</b> San Jose GELATO FEDERATION www.ice.gelato.org	April 15-18
<b>Software Security Summit</b> San Mateo, Calif. BZ MEDIA www.S-3con.com	April 16-17
<b>Software Test &amp; Performance Conference</b> San Mateo, Calif. BZ MEDIA www.stpcon.com	April 17-19
<b>CA World</b> Las Vegas CA www.caworld.com	April 22-26
<b>MySQL Conference &amp; Expo</b> Santa Clara MYSQL AND O'REILLY MEDIA www.mysqlconf.com	April 23-26
<b>Microsoft MIX07</b> Las Vegas MICROSOFT visitmix.com	April 30-May 2
<b>IDUG North America</b> San Jose INTERNATIONAL DB2 USERS GROUP conferences.idug.org	May 6-10
<b>VSLive</b> Orlando, Fla. FAWCETTE TECHNICAL PUBLICATIONS www.ftponline.com/conferences/vslive	May 6-10
<b>JavaOne</b> San Francisco SUN MICROSYSTEMS java.sun.com/javaone/sf	May 8-11
<b>WinHEC</b> Los Angeles MICROSOFT www.microsoft.com/whdc/winhec	May 14-17

For a more complete calendar of U.S. software development events, see [www.bzmedia.com/calendar](http://www.bzmedia.com/calendar). Information is subject to change. Send news about upcoming events to [events@bzmedia.com](mailto:events@bzmedia.com).





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**klip-spring-er** (klip-sprin-er) n., pl. -ers, -er: see PLURAL, 11, D, 1 [Afrik.  
< klip, a rock, cliff + springer, springer] a small, agile mountain antelope  
(*Oreotragus oreotragus*) of S and E Africa

**Kloc-work** (Klok-wurk) verb, 1. The act of using industry-leading automated static analysis tools to scan large code bases in C, C++ and Java. 2. Eliminating defects at the earliest possible time in the development lifecycle, thereby reducing costs. 3. Leveraging proven award-winning technology to improve software quality and software security. 4. Freeing up QA resources to focus on critical tasks and delivering better products to your customers.

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< Du. klooven, to cleave, akin to CLEAVE

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